

Predicting Children's Academic Achievement from Parental Aspirations,  
Expectations, Help with Schoolwork, and Home Learning and Language

Materials

by

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## ABSTRACT

The present study examined the relations between indices of parental involvement (parental aspirations, expectations, help with schoolwork, home learning and language materials) and children's academic achievement in a sample of 291 kindergarten-2<sup>nd</sup> grade children. Children's academic achievement was assessed with the Woodcock Johnson and parents reported on expectations, aspirations, help with schoolwork, home learning and language materials. Latent Growth Curve Models were used to test whether there was growth in the parent involvement variables and whether growth in the parent involvement variables predicted growth in academic achievement. The intercept for parental expectations was the only intercept to predict the intercept of academic achievement. Rates of growth in parental expectations, parental help with schoolwork, and home learning materials predicted rates of growth in academic achievement.

For my Mom:

Whose love and compassion for the hurting inspired me to enter this field

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## **Introduction**

How children function in the school setting greatly influences their development. Children that learn to function well are often socially competent (Ladd, 2003), have good mental health (Caspi, Elder, & Bem, 1987) and graduate high school (Ensminger & Slusarcick, 1992). Graduating from high school is important, in part, because high school graduates earn approximately \$9,634 more a year and 20% more over a lifetime than high school dropouts (U.S. Bureau of the Census, 2006). High school graduates also live longer than those who do not complete high school (Muennig, 2005). In contrast, children who drop out of high school are at greater risk for negative outcomes, such as not obtaining work, earning less over a lifetime, and even criminal behavior (Thornberry, Moore, & Christensen, 2006). Therefore, it is imperative to identify the predictors of children's academic achievement, particularly those variables that may be modified. The primary aim of the current study is to identify aspects of the home environment (e.g., parental aspirations and expectations, parental help with schoolwork, home learning materials, and home language materials) that are related to children's academic achievement.

Although there is a great deal of attention focused on the high school years because of the drop-out rates, many researchers acknowledge the importance of understanding the early formative elementary grades. Alexander, Entwisle, and Horsey (1997) posit that dropping out of high school is the culminating action of years of school maladjustment. Understanding the various predictors of academic achievement in the early years of school is paramount to understanding why

children eventually drop-out (Alexander et al., 1997). Previous research has found that those children who did not have early parental guidance and involvement in education were at a higher risk of becoming a high-school dropout (Jimerson, Egeland, Sroufe, & Carlson, 2001). Additionally, children who adjust well in elementary school due to parental involvement also adjusted well in high school (Jimerson, et al., 2001). Furthermore, those students with high academic achievement were more likely to graduate high school and obtain work (Trusty, 2000).

There has been much attention paid both publicly and politically to the role that parents play in their children's education. For example, the importance of parental involvement to children's academic achievement has been noted by several U.S. Presidents (Domina, 2005). The most recent educational reforms with a focus on parental involvement began in 1986 when the Reagan administration encouraged parents to become more involved in their children's education through school choice. The Clinton administration added a new provision to the Elementary and Secondary Education Act, which required Title 1 schools to utilize some of their federal funds on developing programs that would improve the relationship between parents and school. Additionally, the most recent Bush administration sought to increase parental involvement in school by making it one of the six central goals of the No Child Left Behind Act of 2002 (Domina, 2005). Policy makers and educators believe that parent involvement in school improves the achievement of low-income children (U.S. Department of Education, 2005). The financial investments in fostering parent involvement

suggest that it is important to better understand the role of parental involvement in children's academic achievement.

There are three hypothesized reasons that parent involvement has become the focus of educational reform. The first reason is that parent involvement is viewed as a social investment that is worth far more than it costs to foster (Desimone, 1999). Second, that parent involvement research can address considerations of equality and equal opportunity (Currie, 1997), and lastly that in the U.S., there is a strong belief that the main responsibility for children's education lies with the parents (Heclo, 1997).

During a recent interview regarding the education crisis, President Barack Obama stated, "We can't spend our way out of it. Our per-pupil spending has gone up over the last couple of decades, while results have gone down" (Obama, 2010). Given the current educational and budget crisis, this study aims to offer research that could help inform one part of the solution for school improvement by highlighting variables that are modifiable – parental aspirations and expectations for their children's education, parental help with schoolwork, and home learning and language materials

The present study examines the importance of parental involvement in school during the early years (K-2<sup>nd</sup>). Kindergarten is the beginning of a child's formal educational career and it can be a time of great transition for the child. Rimm-Kaufman, Pianta, and Cox (2000) found that more than 1 in 3 kindergartners had difficulty following directions, working in a group, or interacting with peers. A parent's involvement in that transition can have a

positive effect on children's adjustment during their first year of school. Klimes-Dougan, Lopez, Nelson, and Adelman (1992) found that parent's participation in kindergarten is associated with teacher's positive ratings of children's adjustment in kindergarten. Furthermore, parent involvement in early schooling was found to have a positive relation to children's academic achievement in school (Barnard, 2004; Reynolds, Mavrogenes, Bezruzk, & Hagemann, 1996).

This study focuses on how parent involvement and resources in the home relate to a child's early academic achievement. In particular, there is little research on how such predictors change over time in relation to predicting children's achievement. I aim to fill this gap in the literature by examining if mean level changes in indices of parental involvement predict changes in children's academic achievement.

There are several ways that parents can be involved in their children's education. The first way for parents to be involved is to express aspirations and expectations about education to their children. Some data suggest that children whose parents had higher expectations outperformed other children in reading and math longitudinally (Entwistle & Alexander, 1996). Another way for parents to be involved is parental help with schoolwork. Dearing, Simpkins, Kreider and Weiss (2006) found that parent involvement in school can help to close the achievement gap between low and higher income children. Dearing et al. (2006) highlight the need for longitudinal data to better understand the relations between parental involvement and children's academic achievement. Englund, Luckner, Whaley, and Egeland (2004) found that both higher parental involvement and higher

academic achievement at first grade predicted higher involvement and academic achievement in third grade suggesting longitudinal benefits to early parental involvement in education.

It is hypothesized that parental aspirations and expectations and parent involvement in school influence children's academic achievement. In the remainder of the introduction a broad overview of the study is offered, including a review of relevant theories that support the hypothesized relations and processes.

### **Theoretical Perspectives on Children's Academic Achievement: The Roles of Aspirations, Expectations, and Parental Involvement**

Theory is invaluable to research because it guides researchers and offers mechanisms for interpreting data (White & Klein, 2002). Theory helps organize data so that it can be analyzed within a set of ideas and interpreted within a specific context. Likewise, advancement of theory depends on the continuation of research. There are many theories and models that attempt to explain the relation between the home environment and children's academic achievement.

Ecological theory has been the focus of much attention in educational research and has been the basis of various models of influence on children's academic achievement. According to Bronfenbrenner (1979) the individual is embedded in a web of nested systems of influence that affect the individual's development. There are 5 systems in Bronfenbrenner's model. The first is the microsystem which is where the individual lives. This system includes family, friends, school, neighborhood etc. The second system is the mesosystem which refers to relations between Microsystems. For example, the relation of family to



school or family experiences to friend experiences. The third system is the exosystem which is a link between the context that the individual does not have control over and one he/she does. For example, the loss of a father's job may impact the home environment for the child in a myriad of ways. The fourth system is the macrosystem which is the culture in which one lives (i.e., country, SES, ethnicity etc.). The last system is the chronosystem which refers to the life course of an individual (i.e., the year he/she was born, the political environment, the historical time etc.; Bronfenbrenner, 1979).

An important aspect of ecological theory is that each system includes different roles, norms, and rules depending on the individual. For example, an individual living below the poverty line has different challenges than one who lives in an affluent neighborhood. The first individual's home environment may be one that is dangerous, possibly an inner-city and he/she may have to focus most of his/her energy on survival rather than on schoolwork for example. Whereas, the second individual may not have any worries in his/her home environment and may have lots of time for schoolwork etc. One's nested systems will be different depending on a variety of variables (e.g., SES, marital status, ethnicity, etc.). The majority of educational research focuses on the microsystem and mesosystem which would focus on individual characteristics as well as the interaction between home life and school life.

Many different microsystem and mesosystem variables can affect children's academic competence in school. Recent studies have found that microsystem variables such as children's socioeconomic status (Barrington &

Hendricks, 1989), children's effortful control and social competence (Seeley, 2007; Valiente, Lemery-Chalfant, & Castro, 2007; Valiente, Lemery-Chalfant, Swanson, & Reiser, 2008) and mesosystem variables like children's peer relationships (Ladd, 1990), parenting styles (Aunola & Nurmi, 2005; Seeley, 2007), parental effortful control (Cumberland-Li, Eisenberg, Champion, Gershoff, & Fabes, 2003), parental aspirations and expectations (Zhan, 2006), and parent's involvement in education (Astone & McLanahan, 1991; Barnard, 2004; Epstein, 1987) all play a role in children's academic achievement. The above listed are just a few of the ecological factors that researchers have studied in an attempt to understand why some children succeed in school and others do not.

Much research on children's academic achievement focuses on those variables that can be changed through intervention (i.e., parental involvement in school). Epstein (1992) developed a six factor model that focuses on the ecological intertwining of the familial environment and the school environment. Those factors are (a) getting parents involved in school-community collaborations, (b) home-based learning, (c) child-rearing practices, (d) involving parents in school decision-making, (e) school-parent communication, and (f) encouraging parents to volunteer at school. Furthermore, Hoover-Dempsey and Sandler (1995) map out an ecological perspective on what may influence children's academic achievement. They focus on microsystem demographic variables, but also focus on parental factors in the mesosystem. The following literature review examines hypothesized predictors of children's academic

achievement such as parental aspirations and expectations, parental help with schoolwork, and home learning and language materials.

### **Literature Review**

The thesis of this paper is that parental aspirations and expectations for their children's education, parental help with schoolwork, and home learning and language materials predict children's academic achievement. In the remaining review, the relation between parental involvement in school and its effect on children's academic achievement are reviewed.

One component of parent's involvement in school is parental aspirations and expectations of children's education. Aspirations and expectations are defined in the literature as covert and overt attitudes and verbal and non-verbal messages transmitted from the parent to the child about education (Goldenberg, Gallimore, Resse, & Garnier, 2001). Parental aspirations differ from parental expectations in important ways. For example, parents may like or aspire that their children reach certain levels of education, but then when asked what they really expect from their children it may be lower than what they aspire for their children; however, the terms are often used interchangeably in the literature (Bloom, 1980; Fan & Chen, 2001; Goldenberg et al., 2001). Parents communicate the importance of or unimportance of education in a myriad of ways and it differs from family to family depending on their circumstances (Balli, 1996). Some of the ways that parents send these messages are through verbal and non-verbal words, attitudes, and reactions about the importance of education, willingness to help with homework, and levels of physical participation in children's school (Balli, 1996).

Children's academic achievement has been categorized in many different ways. The term has been used to encompass a wide range of socio-emotional, physical, and scholastic factors. For the purposes of this paper, children's academic achievement describes the success children achieve in school by measuring their academic scores. Academic scores are measured by obtaining children's math and reading scores on the Woodcock Johnson assessment (WJ-III, Woodcock, McGrew, & Mather, 2000).

### **Parents' Aspirations/Expectations and Children's Academic Achievement**

It is hypothesized that parental aspirations and expectations relate to children's academic achievement because of the ecological assertion that parents are heavily embedded in their children's environments and therefore have the potential to greatly affect him/her (Broffenbrenner, 1979) including the attitudes or unspoken expectations of a parent to a child. Those attitudes can be transmitted both verbally and nonverbally. Parents communicate the importance of or unimportance of education in many ways and these communications differ from family to family depending on their circumstances (Balli, 1996). Parental aspirations are viewed as part of the influence from the home environment that both directly and indirectly affect children's academic achievement in school (Reynolds & Wahlberg, 1992; Zhan, 2006).

Verbal messages are usually defined as parents talking to children about school and their school experience. Some researchers have found that verbal messages that incorporate parental aspirations for their child's educational outcomes are related to school retention. Ekstrom et al. (1986) found that students

that dropped out of school were less likely to have discussions with their parents about their school experience than those students that completed high school. Studies on migrant families where children have successfully completed their education and it was found that at least one parent provided verbal support of education and encouraged their children to stay in school in order to achieve a better life than their parents (Salerno & Fink, 1992). Kinard and Reinherz (1986) found that SES is negatively related to academic achievement. Yeung, Brooks-Gunn, & Smith (1998) found that children in low income families who earned below the poverty line were found to score between 6 and 13 points lower on various standardized tests; however, there are several reasons why SES is negatively related to academic achievement. Some families in poverty experience a divorce and therefore cannot spend as much time on their child's education because they have to work longer hours to make up the loss of income (Hetherington & Stanley-Hagan, 1999). Additionally, children in low SES families have less access to educational resources and watch more TV than their higher SES counterparts (Bradley & Corwyn, 2002). It is hypothesized that verbalizing expectations for education can mediate the effects of low SES. One qualitative study that interviewed low SES families with high achieving families found that each family placed a high importance on education and talked with their children often about the importance of getting a higher education and how it would help them in the future. They also discussed with their children the importance of schoolwork and set boundaries that educational activities such as doing homework were not optional (Milne & Plourde, 2006).

Nonverbal messages can be as equally important as verbal messages. For example, one way that parents show their children that education is important is by alerting their children that they have a savings account for college. Downey and Powell (1993) found that children who knew that their parents had a college fund for them felt that education was important to their parents.

Researchers also found that children internalize messages simply by observing their parents. For example, Coffman (1992) found that some 4<sup>th</sup> graders in a class were not taking their schoolwork home to show their parents. The teacher asked the students why they were not showing their parents their schoolwork and those students said that they had observed their mothers throwing their previous papers into the trash. The message was internalized within the children that their papers were not important; therefore education may not be that important.

Parents who have higher expectations for their children in general are more likely to have higher standards for their children's school success. They also have higher standards for getting along with teachers and peers, and ensuring better adjustment in school (Reynolds & Walberg, 1992). There are many studies that provide support for the assertion that parental attitudes and aspirations toward education positively affect children's academic achievement (Furstenberg & Hughes, 1995). For example, Smith (1991) found that parental expectations for college attendance was a predictor for actual college attendance, regardless of urban, suburban, or rural areas and similar results were found among African American teenage mothers and their children (Furstenberg & Hughes, 1995).

Parental expectations/aspirations have also been found to override risk factors for academic achievement such as low SES or lack of parental education (Jacobs & Harvey, 2005). Marjoribanks (1994) found that parental interest, expectations, attitudes, and aspirations were extremely important to children's academic achievement. Furthermore, parental expectations and aspirations mediated the negative effects of other variables such as low SES, single-parent homes, and even uninvolved parents. Parental expectations/aspirations were also positively correlated with academic achievement directly and indirectly through student, peer, and classroom variables (Alexander et al., 1997).

There have been some mixed reviews as to whether parental aspirations/expectations for their children affect academic achievement. It was found in one study that targeted third and fourth graders that parental expectations predicted children's achievement but only after controlling for earlier achievement (Halle, Kurz-Costes, & Mahoney, 1997). Additionally, Hong and Ho (2005), found that in a White sample, parental aspirations had long lasting positive effects (at least for 4 years) on academic achievement. Whereas Goldenberg, Gallimore, Reese, & Garnier (2001) found that children's achievement actually predicted parental aspirations, which turned out to have no significant effect on children's achievement over time in kindergarten through sixth graders.

Parental aspirations and expectations may also work together with aspects of the school environment. For example, a significant correlation was found between parental expectations/aspirations for their children's education and the achievement level of schools. Jacobs and Harvey (2005) found that parents at

higher achieving schools felt that there was pressure for their children to achieve and altered their expectations accordingly. Parents at lower achieving schools were the most satisfied of all the groups with their children's education and indicated that achievement was not a high priority for them. Parents at higher achieving schools reported the highest expectation level of achievement for their children, which was significantly higher than parents at medium or low achieving schools. This may suggest a bi-directional effect. It could be that either parents with high expectations send their children to higher achieving schools, or parents develop higher expectations for their children because the schools have them as well. This effect could be tested by examining the This may also be a result of societal expectations in that society does not expect lower income children to succeed and thus do not support the school as much, whereas a higher achieving school in an affluent neighborhood probably has lots of community and monetary support (Dupere, Leventhal, Crosnoe, & Dion, 2010).

Furthermore, the importance of mathematics in school has been a recent topic of discussion among researchers and politicians. The U.S. Secretary of Education, Arne Duncan, reported that 15-year olds' scores in math now lag behind those of 31 countries (U.S Department of Education, 2009). There is a concerted effort in the educational and political arenas to focus on improving the math scores of American students. A study by Ma (2001) found that parental expectations were among the strongest indicators of success in advanced mathematics for the student. Parental expectations and outcomes were more important than student expectations for themselves, or peer or teacher



expectations. Ma's study highlights the unique contribution of parents to their children's success in mathematics. Improving parental expectations and aspirations of their children's education may be one answer to the problem of lagging math scores. Furthermore, Fan and Chen (2011) found that the higher the parents' aspirations for their children's education, the higher the grades and test scores.

Most research on parental aspirations and expectations focus on expectations and aspirations for high school and college success; however, a few studies have addressed the early years. It is hypothesized that early parental influence over education influences students' post-secondary educational aspirations, which can lead to educational attainment (e.g., college) and eventually occupational attainment (Trusty, 2000). There also appears to be a strong relation between parental educational expectations/aspirations for their children and children's expectations/aspirations for themselves (Hanson, 1994). Trusty (1998) found that there was a longitudinal relation between parental expectations/aspirations for their children in their senior year in high school and their children's expectations 2 years later. Trusty's study suggests that parental expectations and aspirations for education when children are young may lead to both educational and occupational attainment later in life.

### **Parents' Involvement in Education and Children's Academic Achievement**

The term *parent involvement* has been defined in a number of ways. It has been used to describe many different behaviors, parenting practices, communication between parents and school, and parental attitudes toward their

children's academic achievement. Researchers do however agree that the construct of *parent involvement* is multi-faceted because it encompasses a wide variety of parental behavioral patterns and parenting practices (Balli, 1996). There are factors that happen between school and parent, children and parent in the home, and attitudes and aspirations about education that the parent passes on to the child.

Many researchers base their working definition of parental involvement in school on Epstein's (1992) six factor model. Those factors are (a) getting parents involved in school-community collaborations, (b) home-based learning, (c) child-rearing practices, (d) involving parents in school decision-making, (e) school-parent communication, and (f) encouraging parents to volunteer at school. Fan and Chen (2001) found that certain aspects of parental involvement (e.g., parents volunteering at school or parent/teacher communication) sometimes had significant effects and other times did not. Barnard (2004) argues that Fan and Chen's (2001) meta-analysis findings were inconsistent because of the varying definitions of parental involvement used in previous studies and the disagreement within the field as to what constitutes parental involvement. A review of various types of parental involvement follows.

**Parental help with schoolwork.** Direct academic instruction or help with homework by parents in the home can also have a positive effect on children's academic achievement. Toomey (1993) performed a meta-analysis of 40 British and Australian studies in which parents simply listened to their child reading at home. Parents who were taught how to listen to their children read and encourage

them had much better outcomes than parents that did not read with their children. Likewise, Hoover-Dempsey, Battiato, Walker, Reed, DeJong, & Jones (2001) found that when parents helped their children with homework, it was positively related to academic achievement. Bempechat (1992) also found that aspects of parental involvement, including parental help with homework or at home instruction was positively associated with academic success. Parent tutoring was also found to improve reading scores and when combined with peer tutoring found to prevent further difficulties in mathematics (Fishel & Ramirez, 2005); however, studies are mixed and there are some studies that have not found positive correlations between parental involvement in school and aspects of academic achievement (Fan & Chen, 2001; Jeynes, 2003).

Hoover-Dempsey and Sandler (1995) hypothesize that there are three main ways that parental involvement affects children's academic functioning. Parents can affect their children's education through *modeling*, which includes behaviors showing that education is worth their interest and time (i.e., talking with teacher after school, asking questions about school). Secondly, parents can *reinforce* aspects of school-related learning by giving the child attention, praise, and rewards for good grades, a creative project, or exhibiting good behavior at school. Thirdly, parents can offer *instruction* at home, related to children's schoolwork. Parents that engage in open-ended instruction when helping their children with homework can help to promote higher levels of cognitive complexity in their children, possibly leading to higher understanding and academic achievement in school.

Hoover-Dempsey and Sandler (1995) assert that parents become involved in their children's education because they believe it is their job as a parent, because they build a sense of self-efficacy when they are able to help their child with homework, and because their children or children's school encourage parent involvement. A weakness of the Hoover-Dempsey and Sandler article is that the authors do not focus on other variables that may affect parental involvement such as a differing definition of involvement based on ethnicity. For example, some Mexican Americans may view the model of education differently than Caucasian parents, leaving a large responsibility to the school to educate their children academically and see themselves as the moral educators of their children (Reese, Balzano, Gallimore, & Goldenberg, 1995). However, research shows that high achieving Latino students report high levels of parental involvement at home and at school (Durand, 2011). Also, some schools do not seek parent involvement because of language barriers, leaving a large population of parents out of their child's education process due to school assumptions, not lack of parental interest.

Children's ability to read has been an important area of educational research given that illiteracy can have very negative effects on society. Illiterate adults experiences poorer health outcomes, less financial security, and lower life expectancy compared to the overall population (Roman, 2004). Furthermore, Miller and Kratochwill (1996) assert that reading is imperative in today's information and technology age. Tizard, Schofield, and Hewison (1982) in a seminal study found that children whose parents simply listened to them read aloud at home 2-4 times a week made positive gains in reading. Children whose

parents tutored them in reading had increased academic performance in many areas (Graue, Weinstein, & Walberg, 1983). Finally, Fiala and Sheridan (2003) found that a paired reading method between parent and child increased the reading accuracy rates of children. Parent involvement in all academic areas of school, especially involvement in reading, is very important to the academic achievement of children.

**Home learning and language materials.** Another way that parents can be involved in their children's education is through home learning and language opportunities. Home learning can be an important supplement to school learning (Ekstrom et al., 1986). Creating an optimal environment for learning at home is a way that parents can be involved in their children's education. Students who had access to study aides at home (e.g., a computer, books, puzzles) were less likely to drop out of school (Ekstrom et al., 1986). Home learning does not necessarily focus solely on direct instruction like teaching children the alphabet or shapes, but can also include having a newspaper or magazine delivered to the home so that children see parents reading or having puzzles accessible to their children (Bradley et al., 1992). It is hypothesized that if parents are making materials available and encouraging learning at home then they are sending a strong message to their child that education is important. Further highlighting the importance of parental support at home, Dornbusch and Glasgow (1996) found that successful Asian American students in their study had parents that encouraged and supported education at home, but were less involved at the school site.

**Problems with the term *parent involvement*.** In a meta-analysis Jeynes (2005) found that parent involvement in school was associated with higher academic achievement regardless of income level, ethnicity, or gender. Additionally, Mcnamara, Hustler-Stronach, Rodrigo, Beresford, and Bothcherby (2000) argue that it is a mistake to view parental involvement in school as a solely physical act because this fails to recognize the positive contribution of many parents that cannot put the physical time into volunteering, but provide structured support and maintain high expectations of their children's educational success at home.

Nakagawa (2000) discusses the idea that the very definition of *parent involvement*, as defined by public policy and school personal is problematic because it marginalizes those families that support their children in non-traditional ways. Nakagawa (2000) explains how parents are put into a double bind because they are asked to participate in their children's education but only in ways that the school sees fit. Therefore, when the parent does not become involved in sanctioned ways, the parent is viewed as an uninvolved parent. For example, Arzubiaga (2002) explains that dinner table conversations between parents and children that may not focus specifically on academics but utilize readings skills like word identification and comprehension are better equipping children to read. Nakagawa (2000) also asserts that parent involvement is often viewed as a substitute for proper school funding, which places a large burden on the shoulders of parents to change the direction of a failing school. Nakagawa suggests that

rather than viewing parents as the problem, they should be viewed as one part of the overall solution.

Another hypothesized connection between parental involvement and children's academic competence is the idea that parents who are involved in their children's education feel a personal responsibility to make sure their child does well in school. Alexander et al. (1997) assert that if parents feel personally responsible for their children's education then they are more likely to express confidence in their children's academic ability, have higher expectations for their children and share the schools ideas about encouraging appropriate classroom behavior.

Results have also been mixed when examining parental involvement and academic achievement. Izzo, Weissberg, Kasprow, and Fendrich (1999) and Sui-Chu and Willms (1996) found that parental involvement at home, rather than at school was positively related to AC; however, Shumow and Miller (2001) found that parental involvement at home was negatively related to achievement, while parent involvement at school was positively related to children's academic achievement.

One intervention program was implemented to test whether parent involvement makes a long term difference in the educational success of children. Barnard (2004) examined the data from the Chicago Longitudinal Study, which is a program that encourages more parent involvement in elementary school. Even after controlling for background characteristics and risk factors, parent involvement in elementary school and beyond was significantly associated with

higher grades, on-time school completion, and lower rates of high school dropout. Existing research shows that the benefits of parental involvement were most effective when they were long-lasting and continued on through high school (Salerno & Fink, 1992) and that parents who expressed high expectations for their children were less likely to drop out of high school (Ekstrom et al., 1986).

One strength of parent involvement research is that researchers are making more of an effort to separate out the different aspects of parent involvement (i.e., helping with homework, parent-teacher communication, home learning materials etc.) and are making efforts to connect certain parent involvement activities to specific outcomes (Fishel & Ramirez, 2005). The strength of the above action is also the literature's biggest weakness because there is still so much discrepancy between studies as to the measurable definition of parental involvement.

Another weakness of the literature in general is that it consists of many concurrent studies. However a few studies have examined longitudinal data. Englund et al. (2004), found that both higher parental involvement and higher achievement at first grade predicted higher involvement and achievement in third grade. Additionally, Izzo, Weissberg, Kaspro, and Fendrich (1999) found that third grade achievement levels were related to earlier involvement levels. There are very few studies on elementary school students even though research has shown that positive early foundations in elementary school have an impact on Jr. High, high school, and college (Alexander et al. 1997). The present study utilizes longitudinal data to contribute to the outcome research in an effort to identify predictors of children's adjustment in school.



## Summary and Predictions

The goal of this paper is to examine the longitudinal relations (K-2<sup>nd</sup> grade) between indices of involvement (parental aspirations and expectations, parental help with schoolwork, and home learning and language materials) and children's academic achievement. I examine the relations through a series of growth curves. Growth curves permit me to predict the growth of children's academic achievement from my parent involvement predictors. It is hypothesized that:

1. The intercept of the parent involvement predictors will be positively related to the intercept of academic achievement. This will examine if where children start on the parent involvement scales is related to where they start on the academic achievement scale.
2. The intercept of the predictor will predict growth in the slope of academic achievement. This will examine whether where children's start on parental involvement scales predicts growth in academic achievement.
3. The slope of the predictor will predict growth in the slope of academic achievement. This will examine if growth in rate of change in parent involvement predicts growth in the rate of change in academic achievement.

## **Method**

### **Procedure**

Before the academic year began, all parents of new kindergarten students at participating schools received in the mail, an introductory letter describing the present study (cohort 1 began in 2006 and ran through 2009; cohort 2 began in 2007 and ran through 2010). The letter included information about the research project, its procedures, and ways parents and children could become involved in the project. Data were collected from children, their parents, and their teachers. Research assistants working on the Predicting Academic Competence in Kids (P.A.C.K.) Project went to parent orientation nights at participating elementary schools and gave a brief presentation of the study in an effort to enroll parents and students in the study. Parents and teachers were then asked to complete questionnaires in the fall, approximately three months after the beginning of the school year. All eligible teachers ( $N = 29$ ) participated in the study.

In the fall, research assistants went into the elementary schools during the day and worked with participating students out of their classroom in order to administer tasks that assessed their verbal intelligence and attentional control. In the spring (six months after fall data collection and nine months after the start of the school year), students completed subtests from the Woodcock Johnson assessment. Parents received \$25 when kids were in Kindergarten, \$30 in 1st grade, and \$35 in 2nd grade. In the fall, teachers received \$25 per student packet completed. In the spring, teachers received \$3 per packet completed (it was a much smaller one-page questionnaire on achievement). Children were given a

small toy after each assessment. The core participating schools received \$200 per year, and we also gave core school front office staff a gift basket at the end of the year for their assistance.

## **Participants**

Participants were 291 (122 girls and 169 boys) kindergarten students and their parents, and their teachers. The average age of the students was 67.72 months old. The participating students attended public schools in the southwestern United States and provided assent. The sample adequately represented the sex and racial populations of each school. Forty percent of all kindergartners in the schools were girls, and according to parents' reports of children's race or ethnicity, 75% (population percentages are in parentheses; 70%) of participants were White, 14% (17%) were Latino, 8% (8%) were Asian, 3% (4%) were Black, and less than 1% (2%) were American Indian. Students were predominantly from two-parent homes (89%), in which the primary caregiver was the child's mother (95%; 5% were fathers). The mean reported family income range was \$70,000 to \$80,000 and ranged from below \$10,000 to above \$100,000. Less than 1% of primary caregivers (percentages for secondary caregivers are in parentheses; 1%) did not have a high school diploma; 4% (9%) had a high school education; 29% (32%) had some college education; 38% (33%) had a 4-year-college degree; and 28% (25%) had attended graduate school.

Five of the original 291 students and their parents dropped out of the study between kindergarten and the start of the first grade year. Eight more students

dropped out between fall of first grade and spring of first grade bringing the dropout total to 13.

## **Measures**

**Parental aspirations and expectations for child's education.** Parents were first asked, "In the best of all worlds, how much schooling would you like your child to complete?" Then they were asked, "Sometimes children do not get as much education as we would like. How much schooling do you expect that your child will really complete? (see appendix A for complete questionnaire). Choices for both questions ranged from *11<sup>th</sup> grade or less* to *doctoral degree* (see Appendix A for complete questionnaire).

**Parental help with schoolwork.** Parents reported on the frequency of involvement they invested in their children's schoolwork with 15 items designed by researchers of the Childhood and Beyond Study (<http://www.rcgd.isr.umich.edu/cab/>). Items were reliably assessed ( $\alpha = .82, .82, .81$  for Wave 1- Wave 3 respectively). Items were rated on a 7-point Likert scale from 1 = *Never*, 4 = *About half the time*, to 7 = *Always*. Typical statements from the assessment were "Tell child you think she/he is talented in school," "Make sure child spends time on the schoolwork at home (for example: studying, doing homework)," and "Tell child how disappointed you are when child does not do their schoolwork" (see Appendix B for complete questionnaire).

**Home learning and language materials.** Participants' report of home and learning and language materials was assessed with parental reports from one subscale of the HOME Inventory (Bradley et al., 1992). Items were rated on *yes*

or *no* scale with statements such as, “My child has toys which teach colors, sizes, and shapes,” “Our family encourages the child to learn the alphabet,” and “My child has a record, tape, or CD player and at least 5 children’s records, tapes, or CDs” (see Appendix C for complete questionnaire).

**Children’s academic achievement.** In the spring of the academic year, students completed math (Applied Problems) and reading (Letter-Word and Passage Comprehension) subtests from the Woodcock-Johnson III Tests of Achievement (WJ-III, Woodcock, McGrew, & Mather, 2000). The Woodcock-Johnson standardized test provides assessments of intellectual ability to participants’ ages 2 to 90 years old. The WJ-III tests provide a normative score for comparison of a participant’s score against the national average for that participants’ age. Students’ raw scores (i.e., the sum of correct answers within a subtest) were converted to *W* scores for each subtest using WJ-III computerized scoring technology. *W* scores are an interval-scaled measure of ability and are similar to standardized scores. At each assessment the Letter-Word, Passage Comprehension, and Applied Problems subtests were correlated highly. At Time 1 (T1), Letter-Word was significantly related to Passage Comprehension and Applied Problems, and Passage Comprehension and Applied Problems were also highly related,  $r_s(289) = .75, .55, \text{ and } .51, p_s < .01$ , respectively. This same pattern emerged at Time 2 (T2) ( $r_s(278) = .84, .52, \text{ and } .58, p_s < .01$ , respectively) and Time 3 (T3),  $r_s(267) = .71, .57, \text{ and } .65, p_s < .01$ , respectively.

## **Plan of Analyses**

After examining the descriptive statistics I examined the zero-order correlations among the study variables. Next, and to test for growth in the variables I estimated a series of unconditional growth curve models. I then tested for prediction using parallel process latent growth curve models. I used parallel process latent growth models to test whether the intercept and slope of the predictor (parental aspirations, parental expectations, parental help with schoolwork, home learning and language materials) were significantly related to the intercept or slope of children's academic achievement.

## **Results**

### **Descriptive Statistics**

Means, standard deviations, and other descriptive statistics of the study variables were presented in Table 1. All variables demonstrated acceptable levels of normality. The means in Table 1 indicated that home learning materials appeared to decrease slightly over time, whereas the means for academic achievement increased over time. The means for help with aspirations, and expectations, help with schoolwork, home language materials remained consistent from T1 to T3.

### **Correlations among Variables**

Table 2 contains the bivariate correlations among the variables that were examined in the latent growth models. Home learning materials at T2 and T3 were negatively related to parental help with schoolwork at T2. Home language materials at T1 were positively related to parental aspirations at T1 and T2 and

parental expectations at T1 and T2. Parental help with schoolwork at T1 and T3 were positively related to children's academic achievement scores at T1, T2, and T3. Parental help with schoolwork at T2 and T3 was positively related to parental aspirations at T2. Parental expectations at T1 were positively correlated with T1 academic achievement. Parental expectations at T2 and T3 were positively correlated with academic achievement at T1, T2, and T3. As seen in Table 2, the pattern of zero-order correlations was largely consistent with expectations; however it was unexpected that there would be significant negative relations between any of the variables. For example, home learning at T2 and T3 were significantly negatively related to parent help with schoolwork at T2 and parental aspirations at T2 were negatively related to parental help with schoolwork at T2 and T3.

### **Single Variable Growth Models**

Mplus 6.11 (Muthen & Muthen, 2010) was used to compute a series of latent growth curve (LGC) analyses. Under the assumption that missing values are missing at random, maximum likelihood robust (MLR) estimation was used (Enders, 2010), which adjusts standard errors for non-normality and accounts for missing data. Linear models were computed for each variable separately. The six single variable models involved parental aspirations, parental expectations, home learning materials, home language materials, parental help with schoolwork, and children's academic achievement. Quadratic models could not be investigated because only three repeated measures were available for each variable of interest and four repeated measures are required to test quadratic growth.

Each linear model had two latent factors: an intercept and a slope. Each repeated measure was used to indicate the intercept and slope. The loadings for the latent intercept were all set to one. The loadings for the latent slope factor were indicated by time scores. Time scores were used to allow for individually varying times of observation. To compute the time scores, the sample's mean age at the first measurement occasion was subtracted from children's age at each measurement occasion. The mean age at T1 was 67.72 months old. Because time scores were used, many of the traditional fit indices were not available, residuals could not be computed, and the standardized solution was not provided. Thus, all reported parameter estimates are from the unstandardized solution. The intercepts of the repeated observed measures were fixed at zero by default for identification purposes. The residual variances of the repeated observed measures were constrained to be equal across time to reduce the number of estimated parameters.

The linear LGC for parental aspirations, in which the means and variances for the latent intercept and latent slope were estimated, converged without error. There were 248 children in the model and 8 parameters estimated. The loglikelihood value for the model was -768.033. The scaling correction factor for MLR was 2.020. In addition, the AIC = 1552.067 and the BIC = 1580.174. On average, parental aspirations did not show significant growth,  $M = 0.001$ ,  $p = .594$ , indicating that parental aspirations were stable over time on average. The mean for the latent intercept,  $M = 6.960$ ,  $p < .001$ , which represents the average predicted score at 67.72 months of age, was significant. Furthermore, the covariance between the intercept and slope,  $cov = -0.011$ ,  $p = .310$ , was not



significant. Additionally, the variance of the latent slope was not significant ( $s^2 = 0.000, p = .466$ ), indicating there were not individual differences in rate of change in parental aspirations; however, there was variability for parental aspirations latent intercept ( $s^2 = 0.710, p = .007$ ). The residual variance for T1 was not significant ( $s^2 = 0.167, p = .216$ ); however, the residual variances for T2 ( $s^2 = 0.442, p < .001$ ) and T3 ( $s^2 = 0.349, p < .001$ ) were significant.

The linear LGC for parental expectations in which the means and variances for the latent intercept and latent slope were estimated converged without error. There were 248 children in the model and 8 parameters estimated. The loglikelihood value for the model was -789.549. The scaling correction factor for MLR was 2.462. In addition, the AIC = 1595.099 and the BIC = 1623.206. On average, parental expectations did not show significant growth,  $M = 0.001, p = .695$ , indicating that parental expectations were stable over time. The mean for the latent intercept,  $M = 6.138, p < .001$ , which represents the average predicted score at 67.72 months of age, was significant. Furthermore, the covariance between the intercept and slope,  $cov = -0.003, p = .639$ , was not significant. Additionally, the variance of the latent slope was not significant ( $s^2 = 0.000, p = .582$ ), indicating there were not individual differences in rate of change in parental expectations; however, there was variability for parental expectations latent intercept ( $s^2 = 0.647, p < .001$ ). The residual variances for T1 ( $s^2 = 0.325, p = .044$ ) and T2 ( $s^2 = 0.415, p < .001$ ) were significant; however, the residual variance for T3 ( $s^2 = 0.227, p = .087$ ) was not significant.

The linear LGC for parental help with schoolwork in which the means and variances for the latent intercept and latent slope were estimated converged without error. There were 248 children in the model and 8 parameters estimated. The loglikelihood value for the model was -667.983. The scaling correction factor for MLR was 1.103. In addition, the AIC = 1351.966 and the BIC = 1380.073. On average, parental help with schoolwork did show significant growth,  $M = -0.005$ ,  $p = .017$ , indicating that parental help with schoolwork decreased over time. The mean for the latent intercept,  $M = 2.740$ ,  $p < .001$ , which represents the average predicted score at 67.72 months of age, was significant. Furthermore, the covariance between the intercept and slope,  $cov = -0.002$ ,  $p = .478$ , was not significant. Additionally, the variance of the latent slope was not significant ( $s^2 = 0.000$ ,  $p < .666$ ), indicating there were not individual differences in rate of change in parental help with schoolwork; however, there was variability for parental help with schoolwork latent intercept ( $s^2 = 0.417$ ,  $p < .001$ ). The residual variances for T1 ( $s^2 = 0.271$ ,  $p < .001$ ), T2 ( $s^2 = .237$ ,  $p < .001$ ), and T3 ( $s^2 = 0.211$ ,  $p < .001$ ) were all significant.

The linear LGC for home learning materials in which the means and variances for the latent intercept and latent slope were estimated converged without error. There were 249 children in the model and 8 parameters estimated. The loglikelihood value for the model was 646.968. The scaling correction factor for MLR was 1.152. In addition, the AIC = -1277.935 and the BIC = -1249.796. On average, home learning did show significant growth,  $M = -0.005$ ,  $p = .017$ , indicating that home learning materials decreased over time. The mean for the

latent intercept,  $M = 1.888$ ,  $p < 0.001$ , which represents the average predicted score at 67.72 months of age, was significant. Furthermore, the covariance between the intercept and slope,  $cov = 0.000$ ,  $p < .001$ , was significant. Additionally, the variance of the latent slope was significant ( $s^2 = 0.000$ ,  $p < .001$ ), indicating there were individual differences in rate of change in home learning materials and there was variability for home learning materials latent intercept ( $s^2 = 0.008$ ,  $p < .001$ ). The residual variances for T1 ( $s^2 = 0.002$ ,  $p = .037$ ), T2 ( $s^2 = 0.004$ ,  $p < .001$ ), and T3 ( $s^2 = 0.005$ ,  $p < .001$ ) were significant.

The linear LGC for home language materials in which the means and variances for the latent intercept and latent slope were estimated converged without error; however, because the slope was fixed at zero, the intercept and slope of home language materials could not covary. There were 249 children in the model and 6 parameters estimated. The loglikelihood value for the model was 534.015. The scaling correction factor for MLR was 3.187. In addition, the AIC = -1056.029 and the BIC = -1034.925. On average, home language did show significant growth,  $M = -0.001$ ,  $p < .001$ , indicating that home language materials decreased over time. The mean for the latent intercept,  $M = 1.974$ ,  $p < .001$ , which represents the average predicted score at 67.72 months old, was significant. Additionally, there was not variability for home language materials latent intercept ( $s^2 = 0.001$ ,  $p < .487$ ). The residual variances for T1 ( $s^2 = 0.005$ ,  $p = .012$ ) and T2 ( $s^2 = 0.008$ ,  $p = .003$ ) were significant, but the residual variance for T3 ( $s^2 = 0.005$ ,  $p < .001$ ) was not significant.

The linear LGC for children's academic achievement in which the means and variances for the latent intercept and latent slope were estimated converged without error. There were 290 children in the model and 8 parameters estimated. The loglikelihood value for the model was 525.288. The scaling correction factor for MLR was 0.877. In addition, the AIC = -1034.577 and the BIC = -1005.218. On average, children's academic achievement did show significant growth,  $M = 0.020$ ,  $p < .001$ , indicating that children's academic achievement increased over time. The mean for the latent intercept was significant  $M = 4.403$ ,  $p < .001$ , which represents the average predicted score at 67.72 months of age. Furthermore, the covariance between the intercept and slope,  $cov = 0.000$ ,  $p < .001$ , was significant. Additionally, the variance of the latent slope was significant ( $s^2 = 0.000$ ,  $p < .001$ ), indicating there were individual differences in rate of change in children's academic achievement. There was variability for children's academic achievement latent intercept ( $s^2 = 0.032$ ,  $p < .001$ ). The residual variances for T1 ( $s^2 = 0.013$ ,  $p < .001$ ) and T2 ( $s^2 = 0.006$ ,  $p < .001$ ) were significant, but the residual variance for T3 ( $s^2 = 0.000$ ,  $p = .798$ ) was not significant.

In summary, parental aspirations and parental expectations did not show significant growth; however, parental help with schoolwork, home learning materials, home language materials, and children's academic achievement did show significant change over time. Children's academic achievement increased over time whereas, parental help with schoolwork, home learning materials, home language materials decreased over time.

## **Parallel Process Growth Models**

To predict the growth of children's academic achievement from parental aspirations and expectations, home learning materials, and home language materials, and parental help with schoolwork I estimated a series of parallel process models. I estimated five models and in each model, I predicted the intercept and slope of children's academic achievement from the intercept and slope of parental aspirations, parental expectations, home learning materials, home language materials, or parental help with schoolwork.

In the first analysis, the associations among the latent intercept and slope of parental aspirations and the latent intercept and slope of children's academic achievement were analyzed. The LGC for academic achievement and the LGC for parental aspirations were specified exactly as they were in the single variable LGCs, but were estimated within the same model. In addition, the model was specified to estimate the covariance between the latent intercept of and latent slope of parental aspirations; the covariance between the disturbances of the latent intercept and latent slope of children's academic achievement; the regression of the latent intercept of children's academic achievement on the intercept of parental aspirations, the regression of the latent slope of children's academic achievement and the latent intercept of parental aspirations, and the regression of the slope of parental aspirations and the slope of children's academic achievement.

The model converged without error. The loglikelihood value for the model was -249.824. The scaling correction factor for MLR is 1.364. In addition,

the AIC = 537.648 and the BIC = 606.436. There were 276 children in the model and 19 parameters estimated. The latent intercept and slope of parental aspirations covaried negatively and not significantly,  $cov = -0.011$ ,  $p = .311$ , and the disturbances of children's academic achievement covaried positively and significantly,  $cov = 0.000$ ,  $p < .001$ . Contrary to my hypotheses, the latent intercept of parental aspirations did not significantly predict the latent intercept of academic achievement ( $b = 0.014$ ,  $p = .442$ ). Contrary to my hypotheses, the latent intercept of parental aspirations did not significantly predict the latent slope of children's academic achievement ( $b = 0.001$ ,  $p = .631$ ). Inconsistent with hypotheses, the latent slope of parental aspirations did not significantly predict the latent slope of children's academic achievement ( $b = 0.041$ ,  $p = .630$ ). Thus, rate of change in parental aspirations did not predict children's rate of change in academic achievement.

Next, the associations among the latent intercept and slope of parental expectations and the latent intercept and slope of children's academic achievement. The LGC for academic achievement and the LGC for parental expectations were specified exactly as they were in the single variable LGCs, but were estimated within the same model. In addition, the model was specified to estimate the covariance between the latent intercept of and latent slope of parental expectations; the covariance between the disturbances of the latent intercept and latent slope of children's academic achievement; the regression of the latent intercept of children's academic achievement on the intercept of parental expectations, the regression of the latent slope of children's academic

achievement and the latent intercept of parental expectations and the regression of the slope of parental expectations and the slope of children's academic achievement.

The model converged without error. The loglikelihood value for the model was -263.922. The scaling correction factor for MLR is 1.286. In addition, the AIC = 565.843 and the BIC = 634.631. There were 276 children in the model and 19 parameters estimated. The latent intercept and slope of parental expectations covaried negatively and significantly,  $cov = -0.001, p < .001$ , and the disturbances of children's academic achievement covaried positively and significantly,  $cov = 0.000, p < .001$ . As hypothesized, the latent intercept of parental expectations significantly predicted the latent intercept of children's academic achievement ( $b = 0.070, p < .001$ ). Contrary to hypotheses, the latent intercept of parental expectations did not significantly predict the latent slope of children's academic achievement ( $b = -0.001, p = .148$ ). Consistent with hypotheses, the latent slope of parental expectations significantly predicted the latent slope of children's academic achievement ( $b = 0.111, p < .001$ ). Thus, rate of change in parental expectations predicted children's rate of change in academic achievement. Specifically, higher rates of change in parental expectations predicted higher rates of change in academic achievement.

Third, the associations among the latent intercept and slope of parental help with schoolwork and the latent intercept and slope of children's academic achievement were analyzed. The LGC for academic achievement and the LGC for parental help with schoolwork were specified exactly as they were in the single

variable LGCs, but were estimated within the same model. In addition, the model was specified to estimate the covariance between the latent intercept of and latent slope of parental help with schoolwork; the covariance between the disturbances of the latent intercept and latent slope of children's academic achievement; the regression of the latent intercept of children's academic achievement on the intercept of parental help with schoolwork, the regression of the latent slope of children's academic achievement and the latent intercept of parental help with schoolwork and the regression of the slope of parental help with schoolwork and the slope of children's academic achievement.

The model converged without error. The loglikelihood value for the model was -149.505. The scaling correction factor for MLR is 0.819. In addition, the AIC = 337.011 and the BIC = 405.798. There were 276 children in the model and 19 parameters estimated. The latent intercept and slope of parental help with schoolwork covaried negatively and significantly,  $cov = -0.002, p < .001$ , and the disturbances of children's academic achievement covaried positively and significantly,  $cov = 0.000, p < .001$ . Contrary to hypotheses, the latent intercept of parental help with schoolwork did not significantly predict the latent intercept of children's academic achievement ( $b = 0.027, p = .237$ ). Inconsistent with hypotheses, the latent intercept of parental help with schoolwork did not significantly predict the latent slope of children's academic achievement ( $b = 0.000, p = .494$ ). Consistent with hypotheses, the latent slope of parental help with schoolwork significantly predicted the latent slope of children's academic achievement ( $b = -0.018, p < .001$ ). Thus, rate of change in parental help with



schoolwork predicted children's rate of change in academic achievement.

Specifically, higher rates of change in parental help with schoolwork predicted lower rates of change in academic achievement.

Fourth, the associations among the latent intercept and slope of home learning materials and the latent intercept and slope of children's academic achievement were analyzed. The LGC for academic achievement and the LGC for home learning materials were specified exactly as they were in the single variable LGCs, but were estimated within the same model. In addition, the model was specified to estimate the covariance between the latent intercept of and latent slope of home learning materials; the covariance between the disturbances of the latent intercept and latent slope of children's academic achievement; the regression of the latent intercept of children's academic achievement on the intercept of home learning materials, and the regression of the latent slope of children's academic achievement, the latent intercept of home learning materials and the regression of the slope of home learning materials and the slope of children's academic achievement.

The model converged without error. The loglikelihood value for the model was 1165.970. The scaling correction factor for MLR is 0.957. In addition, the AIC = -2293.939 and the BIC = -2225.083. There were 277 children in the model and 19 parameters estimated. The latent intercept and slope of home learning materials covaried positively and significantly,  $cov = 0.000$ ,  $p < .001$ , and the disturbances of children's academic achievement covaried positively and significantly,  $cov = 0.000$ ,  $p < .001$ . Contrary to hypotheses, the latent intercept

of home learning materials did not significantly predict the latent intercept of children's academic achievement ( $b = 0.087, p = .558$ ). Inconsistent with hypotheses, the latent intercept of home learning materials did not significantly predict the latent slope of children's academic achievement ( $b = 0.001, p = .810$ ). Consistent with hypotheses, the latent slope of home learning materials significantly predicted the latent slope of children's academic achievement ( $b = 0.177, p < .001$ ). Thus, rate of change in home learning materials predicted children's rate of change in academic achievement. Specifically, higher (more positive) rates of change in home learning materials predicted higher (more positive) rates of change in academic achievement.

Finally, the associations among the latent intercept and slope of children's academic achievement and the latent intercept and slope of home language materials were analyzed. The initially specified parallel-process model had to be modified. Specifically, the variance of the latent slope for home language materials was set equal to zero to aid model convergence. Therefore, associations with other latent growth factors could not be computed. Thus, the final model was specified to estimate the covariances between the intercept of home language materials and the latent intercept of children's academic achievement, the latent intercept of home language materials and the latent slope of children's academic achievement and the latent intercept and latent slope of children's academic achievement.

The modified model converged without error. The loglikelihood value for the model is 1053.433. The scaling correction factor for MLR is 1.592. In

addition, the AIC = -2074.867 and the BIC = -2016.882. There were 277 children in the model and 16 parameters estimated. Contrary to hypotheses, the latent intercept of home language materials was not significantly related to the latent intercept of children's academic achievement,  $cov = -0.001$ ,  $p = .231$ . The latent intercept of home language materials was not related to the latent slope of children's academic achievement,  $cov = 0.000$ ,  $p = .306$ ; however, as hypothesized, the latent intercept of children's academic achievement was significantly related to the latent slope of children's academic achievement,  $cov = 0.000$ ,  $p < .001$ , which means that initial status of children's academic achievement was related to rate of change in children's academic achievement. Children who started higher in academic achievement tended to have higher rates of growth in academic achievement over time.

## **Discussion**

The goal of this study was to examine the longitudinal relations between parents' involvement in school (parental aspirations and expectations, parental help with schoolwork, and home learning and language materials) and children's academic achievement. Participants began the study when they were in kindergarten and remained in the study until the end of second grade. A series of growth curves were estimated to examine mean level changes and individual differences in both the predictors and the outcomes. In addition, growth curves were used to examine the relations between the predictors and the outcome. It was hypothesized that: (a) the intercept of the predictor would be positively related to the intercept of children's academic achievement (b) the intercept of the predictor

would predict growth in the slope of children's academic achievement, and (c) the slope of the predictor would predict growth in children's achievement.

A series of unconditional growth curves provided mixed support for the hypotheses regarding growth. Parental aspirations and parental expectations did not show significant growth; however, parental help with schoolwork, home learning materials, home language materials, and children's academic achievement did show significant change over time. Children's academic achievement increased over time whereas, parental help with schoolwork, home learning materials, and home language materials decreased over time. In the following, I discuss mean level changes in the single variable growth curves for academic achievement and the parental involvement predictors and then conclude with how the predictors related to mean level changes in academic achievement.

### **Mean Level Changes in Academic Achievement**

Consistent with hypotheses, children's academic achievement demonstrated significant growth, indicating that children's academic achievement increased over time. The tool used to measure academic achievement was the Woodcock-Johnson III Tests of Achievement (WJ-III, Woodcock, McGrew, & Mather, 2000). The Woodcock Johnson can be given to children as young as 5 and is appropriate well into adulthood. Therefore, it is expected that children's scores will continue to increase over time as children gain more knowledge in school. There was significant variability in the latent intercept of children's academic achievement. Consequently, there were significant individual differences in where children started on academic achievement. Additionally, the

variance of the latent slope was significant, indicating there were individual differences in rate of change in children's academic achievement. The intercept and slope of academic achievement were positively and significantly related meaning that children who started higher in academic achievement tended to have higher rates of growth in math and reading achievement. This may be because children who start out with higher scores are at a higher level of learning and may also be able to learn at a faster rate.

### **Mean Level Changes in Parental Aspirations**

Parental aspirations did not demonstrate significant growth in the unconditional model, indicating that parental aspirations were stable over time on average. Furthermore, and inconsistent with my hypotheses, parental aspirations did not predict growth in academic achievement. Some of the reasons for the lack of growth in parental aspirations and relations with achievement may be related to issues with measuring aspiration and the lack of diversity in the sample. Parental aspirations were measured by asking parents one question about how much education they aspire that their children obtain. There was little variability in how the construct was measured. Furthermore, the participants in the study were middle-class, mostly Caucasian children whose parents aspired that their children at least go to college; therefore, there was not a lot of room for growth over time as they already aspired to a high level of education when children were in kindergarten.

Aspirations have the potential to begin at a higher level than expectations because parents may aspire that their child obtain a certain level of schooling but

may not actually expect them to reach it. For example, 99% of the parents in this study aspired that their child get a 4-year college degree or higher. Out of that 99%, 32% aspired that their child get an MD, law degree or Ph.D. This group of parents aspires high. When asked what they actually expect their child to attain, it still remains high with 92% expecting their child to get a 4-year college degree but only 7% expect their child to obtain an MD, law degree or Ph.D. Previous literature demonstrates that children whose parents have higher aspirations tend to have better academic outcomes (Furstenberg & Hughes, 1995). Furthermore, it may be that parental aspirations are set for some children from birth and remain stable over time and because they are doing relatively easy schoolwork in the early grades, parents may not be sure what their children are capable of and therefore will not change their aspirations while children are young. Although, high parental aspirations have been linked to better academic outcomes, it is not necessarily linked to the rate of growth in academic achievement. It may be that other factors have more of a direct effect such as parental help with schoolwork or home learning and language materials.

### **Mean Level Changes in Parental Expectations**

In the unconditional model, parental expectations did not show significant growth, indicating that parental expectations were stable over time. Similar to parental aspirations, parental expectations were measured by the use of one question and given the sample it is not surprising that parental expectations did not change significantly over time. Parents in this social class tend to expect their children to go far past high school (Jacobs & Harvey, 2005).

Parental expectations did, however, predict growth in academic achievement. Parental expectations are different than parental aspirations in that, parents may aspire that their children go far in school regardless of how well their children perform in school; however, parents may be more likely to change their expectations over time depending on how their children perform in school. For example, if a child does not do well in first grade, a parent may still aspire that his/her child go to college but may be adjusting the expectation that the child will attend college. Furthermore, parental expectations are often expressed to children through verbal and non-verbal messages (Balli, 1996) and according to Brofenbrenner (1979) children who pick up on the academic expectations of their parents may perform according to those expectations. Therefore, if parents have high expectations for their children it can be asserted that those children would continue to significantly increase in math and reading achievement.

The latent intercept of parental expectations did significantly predict the latent intercept of children's academic achievement meaning that where children start on the parental expectations scale does predict where they start on their academic achievement. It could be that parents with high expectations start talking about those expectations early and may provide some early academic training in the form of preschool or materials because of their expectations, which results in higher initial scores on academic achievement. The latent intercept of parental expectations did not significantly predict the latent slope of children's academic achievement meaning that where children started on the parental expectations scale did not predict whether their scores grew over time; however,

the latent slope of parental expectations did significantly predict the latent slope of children's academic achievement. Thus, rate of change in parental expectations predicted children's rate of change in academic achievement. Specifically, higher rates of change in parental expectations predicted higher rates of change in academic achievement. Consistent with hypotheses and past research (e.g. Marjoribanks, 1994) children whose parents have high expectations for their educational attainment and who probably voice those expectations encourage their children to obtain high test scores, ensuring success in high school and ultimately in college.

### **Mean Level Changes in Parental Help with Schoolwork**

In the unconditional model, parental help with schoolwork demonstrated a significant decline as children progressed academically. Parental help with schoolwork may decrease over time if students show that they are doing well in school and no longer need their parent's help. Inconsistent with hypotheses, the latent intercept of parental help with schoolwork did not significantly predict the latent intercept of children's academic achievement. Consequently, where children started on parental help with schoolwork did not predict where they start on children's academic achievement. Further, the latent intercept of parental help with schoolwork did not significantly predict the latent slope of children's academic achievement, signifying that where children started on parental help with schoolwork did not predict growth in children's academic achievement.



Lastly, consistent with hypotheses, the latent slope of parental help with schoolwork did significantly predict the latent slope of children's academic achievement. As children leave the home learning environment and enter the classroom learning environment for longer hours, parents may be experiencing a change in instructional responsibility. They may now view the classroom as the sole learning environment and view the teacher as the main instructor and they no longer feel it necessary to help with schoolwork as much. Lam and Pollard (2006) suggest that children are crossing a cultural boundary from home to the classroom in kindergarten and that parents can help in that transition by encouraging children to embrace the classroom as his/her environment for learning (Ramey & Ramey, 1999), making the home environment something different. Although bi-directionality was not tested for, it may be that as children continue to increase their academic achievement scores, parents start to decrease parental help with schoolwork as they see that their children are doing well and do not need their help as much anymore. It should be mentioned that many studies show that parental involvement increases when children begin school (McIntyre, Eckert, Fiese, DiGennaro, & Wildenger, 2007); however, as Domina (2005) pointed out, many studies do not separate out the different factors in parental involvement. It is my assertion that parents practice other forms of parental involvement that take place on school campus and in the classroom (Hoover-Dempsey & Sandler, 1995) once their children enter full-time school. Future research could focus on examining whether the decrease in parental help with schoolwork preceded the increase in academic achievement or vice versa.

## **Mean Level Changes in Home Learning Materials**

In the unconditional model, home learning materials declined over time. It could be that parents start out providing a lot of home learning materials in the form of books and puzzles early on. It may taper off as children spend more time in school and parents do not feel it as necessary to provide educational materials anymore. It could also be that as children's schoolwork gets more complicated parents are not sure what materials they could buy to help children with arithmetic or science. It may be that parents take on more responsibility for their children's learning before Kindergarten and once children start Kindergarten parents lessen their at-home instruction and allow teachers and schools to be the authority on education. As a result, they do not feel the need to offer as many home learning materials because children are receiving them at school. There are many other forms of parental involvement in school such as parent-teacher contact, parent volunteering, serving on school boards and parent-teacher committees. Several studies have found that parents with a higher socio-economic status are more physically involved (physically present at school or have verbal contact with teachers) than their lower SES counterparts (Astane & McLanahan, 1991; Barnard, 2004; Epstein, 1987). The present population is higher SES and may be transitioning from direct academic involvement at home to academic involvement in the schools.

Contrary to hypotheses, the latent intercept of home learning materials did not significantly predict the latent intercept or slope of children's academic achievement. Consequently, where children start on home learning materials does

not predict children's achievement in kindergarten or their growth in academic achievement. Consistent with hypotheses, the latent slope of home learning materials did significantly predict the latent slope of children's academic achievement. Specifically, higher rates of change in home learning materials predicted higher rates of change in academic achievement. This signifies that students who have the fastest rate of change in academic competence are those whose parents do not rapidly decrease home learning materials but rather continue to provide or perhaps even increase home learning materials.

Twenty-five percent of the mothers in the current study are stay-at-home moms and do not work outside the home. Twenty-two percent of the mothers in the study worked 30 hours a week or less so it is likely that these mothers are spending a lot of time in early academic instruction through the use of home learning and language materials. The percentage of moms staying home and working part-time does not seem to change from kindergarten to 2<sup>nd</sup> grade so this sample of mothers is still heavily involved at home and could continue to monitor home learning materials.

Overall, home learning materials decreased over time. So it is likely that parents are not providing many new materials such as books, puzzles, and videos because students are spending more time in the classroom than at home, but they may not be removing them. Home learning does not necessarily focus solely on direct instruction like teaching children the alphabet or shapes, but can also include having a newspaper or magazine delivered to the home so that children see parents reading or having puzzles accessible to their children (Bradley et al.,

1992). It is hypothesized that if parents are making materials available and encouraging learning at home then they are sending a strong message to their child that education is important; thus supporting an increase in children's academic achievement.

### **Mean Level Changes in Home Language Materials**

On average, home language decreased over time in the unconditional model. This may be the same case as with home learning materials where parents start out providing more language stimulation materials for their children in an effort to start language development and then offer less and less as children spend more time in school and have more language interaction with peers and teachers. Children first develop language in their home environment (Snow, 1983) and language development increases drastically for most children upon entering kindergarten or full time school (Silverman, 2007). Parents may not see it as their responsibility anymore to provide home language materials because they notice an increase in the language development of their kindergartners.

Additionally, there was not significant variability for home language materials latent intercept, meaning that children started at a similar point on the scale. There is little variability in the intercept and no variability in the slope. Thus, there is change over time but there are not individual differences in the rate of change. These findings support the above mentioned research that most children follow the same course of language development where they begin the language development process at home and it increases for most students once they enter kindergarten and begin to interact more with others.

Contrary to hypotheses, the latent intercept of home language materials was not significantly related to the latent intercept of children's academic achievement, meaning that where children start on home language materials is not related to where children start on academic achievement. Inconsistent with hypotheses, the latent intercept of home language materials was not related to the latent slope of children's academic achievement, meaning that where children start on home language materials was not related to their rate of growth in academic achievement. It could be that because there is not much variability in where children start in home language and how they grow, it may not have an impact on their academic achievement.

In summary, the intercept for parental expectations was the only intercept to predict the intercept of academic achievement. Further, only the intercept for home language materials predicted the rate of growth in academic achievement. Rates of growth in parental expectations, parental help with schoolwork, and home learning materials predicted rates of growth in academic achievement and the intercept of home language materials was related to the rate of growth in home language materials.

### **Strengths**

The current study contributes to the growing body of literature that elucidates the relation between parental aspirations and expectations, parental help with schoolwork, and home learning and language materials and their effect on children's academic achievement. The study highlights the utility of predicting children's academic achievement from indices of parenting/family environment.

Not only are the results of this study important because they confirm and encourage further research, they can also be used to inform both clinical and intervention programs. For example, the Prevention and Intervention Resource Center at Arizona State University houses a prevention program (Gonzales et al., in press) where Mexican-American children and their parents are advised on ways to relate to each other and to relate to their children's school. The intervention program also offers ways in which parents can become more involved in their children's school experience. The current study demonstrates that changes in children's academic achievement are forecasted by parental involvement characteristics (parental expectations and home learning materials), confirming and supporting current research on parent involvement in school and will continue to advise intervention programs.

Additionally, longitudinal data (kindergarten-2<sup>nd</sup> grade) were used, which adds to the depth of interpretation of results in this study. Many studies involving parent involvement scales focus on one time point or focus on a different developmental stage (e.g., adolescence). This study focused on the early years of school where children begin to formulate their ideas and attitudes about school. Kindergarten can be a pivotal time in a child's academic career (Gutman, Sameroff, & Cole, 2003; Rimm-Kaufman, Pianta, & Cox, 2000) and the longitudinal data in this study provide valuable information about certain aspects of parental involvement that may be important over time.

## **Limitations**

Although the present study makes several meaningful contributions to the literature, several limitations should be noted. The first is that there is not follow-up data for the later years. It would be interesting to test whether parental involvement while children are young affects their academic achievement in Jr. High and high school. Another limitation is that all of the data on parental involvement was collected through questionnaires and is subject to reporter bias. Future studies would benefit by including observational data and by getting a child's perception on their parent's involvement in school. Obtaining the child's perspective may also help to determine, for example, why some students decrease in parental help with schoolwork while experiencing an increase in academic achievement. Finally, the sample was predominantly White. The extant literature suggests that there are differences in the way that parent involvement variables are interpreted and acted out between different ethnicities (Goldenberg, 1996; Goyette & Xie, 1999) based on environmental factors and willingness of schools to bridge language and cultural gaps. In future work, it will be important to examine how the relations considered here operate for families of more diverse backgrounds, cultures, and economic status.

## **Directions for Future Research**

Future research should focus on exploring what happens in the home environment before the child begins kindergarten to test whether the start of kindergarten signals a mental shift from home instruction to classroom instruction. In addition to analyzing the question via quantitative means, it would

be beneficial to utilize qualitative research in order to interview parents and obtain more in-depth data. It would also be beneficial to utilize observational data so that researchers can see what the home environment was like, excluding all self-reporting bias, before kindergarten and how it changes when the child begins kindergarten. Furthermore, it is likely that a shift occurs in the minds of the parents where the emphasis is no longer on in-home instruction. Parents shift instructional responsibility to the teacher and the classroom when children begin kindergarten and parents feel that the classroom is now the main learning environment and not the home. This assertion would best be explored utilizing qualitative research to better understand the mental processes. Future research should also continue to focus on how findings like those in the current study can improve intervention programs with the goal of graduating more students from high school.

Future studies may also want to focus on the process whereby the role of children as agent drivers may be increasing parental involvement. Hong and Ho (2005) assert that children are active participants and not passive recipients in the process, meaning that it is likely that parental involvement in school affects children's own attitudes about school thus affecting children's academic achievement.

## **Conclusion**

In conclusion, it has been suggested that aspects of parental involvement do predict significant growth in children's academic achievement signifying the importance of parental involvement in their children's education. These findings



support the expanding body of research on the vital role that parental involvement plays in the academic achievement of children and have both theoretical and empirical implications for both future research and intervention programs. This line of research will allow parents to prepare their children for greater success in school.

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Table 1

*Descriptive Statistics for Study Variables*

	<i>n</i>	<i>M</i>	<i>SD</i>	Possible range	Observed range	Skewness	Kurtosis
Parental aspirations							
Time 1	246	7.00	.91	1-8	2.0-8.0	-.70	1.91
Time 2	228	6.96	.97	1-8	2.0-8.0	-.94	2.5
Time 3	213	7.03	.86	1-8	5.0-8.0	-.24	-1.19
Parental expectations							
Time 1	247	6.19	.95	1-8	2.0-8.0	-1.21	5.70
Time 2	228	6.14	1.01	1-8	2.0-8.0	-1.30	4.77
Time 3	213	6.21	.94	1-8	2.0-8.0	-1.06	4.48
Help with schoolwork							
Time 1	248	2.69	.81	1-7	1.0-4.87	.38	-.40
Time 2	229	2.71	.78	1-7	1.0-4.93	.16	-.44
Time 3	212	2.60	.75	1-7	1.0-4.87	.10	-.11
Home learning materials							
Time 1	248	1.89	.10	1-2	1.5-2.0	-1.09	1.70
Time 2	228	1.88	.10	1-2	1.5-2.0	-1.25	1.87
Time 3	213	1.87	.13	1-2	1.2-2.0	-1.71	4.60
Home language materials							
Time 1	248	1.97	.08	1-2	1.5-2.0	-2.92	9.19
Time 2	228	1.96	.09	1-2	1.4-2.0	-2.81	9.37
Time 3	248	1.97	.08	1-2	1.5-2.0	-3.0	9.69
Academic Achievement							
Time 1	289	435.53	18.31	N/A	390.0-501.0	.35	.359
Time 2	278	468.79	16.85	N/A	403.0-507.0	-.443	.746
Time 3	267	489.25	15.04	N/A	426.0-522.0	-.718	1.525

*Note.* Time = Time scores which are the observed means in Time 1 = kindergarten, Time 2 = 1<sup>st</sup> Grade, and Time 3 = 2<sup>nd</sup> Grade. These are not the model-implied means. N/A – not applicable.

Table 2

*Zero-order correlations among Study Variables*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1 Parental asp (T1)																	
2 Parental asp (T2)	.633**																
3 Parental asp (T3)	.533**	.512**															
4 Parental exp (T1)	.504**	.445**	.347**														
5 Parental exp (T2)	.356**	.489**	.298**	.598**													
6 Parental exp (T3)	.455**	.539**	.428**	.598**	.651**												
7 Schoolwork (T1)	.011	.049	.043	-.097	.019	.000											
8 Schoolwork (T2)	-.113	-.170*	-.049	-.071	-.039	-.053	.595**										
9 Schoolwork (T3)	-.078	-.156*	-.022	-.074	-.053	-.092	.568**	.627**									
10 Learning mat (T1)	.068	.088	.023	.102	.083	.057	-.018	-.098	-.058								
11 Learning mat (T2)	.037	.158*	.059	.125	.050	.097	-.063	-.154*	-.085	.645**							
12 Learning mat (T3)	.057	.075	-.013	.091	.012	.078	-.061	-.140	-.125	.502**	.630**						
13 Language mat (T1)	.146*	.195**	.014	.114	.137*	.164*	.007	-.074	.104	.250**	.185**	.143*					
14 Language mat (T2)	-.104	.045	-.057	-.027	-.025	-.037	.022	-.033	-.088	.329**	.406**	.323**	.183**				
15 Language mat (T3)	.046	.078	-.096	.046	.002	.079	-.042	-.104	-.108	.216**	.270**	.525**	.259**	.394**			
16 Achievement (T1)	.030	.102	.065	.180**	.266**	.271**	.134*	.123	.080	.071	.090	.014	-.076	-.103	-.112		
17 Achievement (T2)	.005	.061	.050	.099	.202**	.074*	.142*	.055	.108	.075	.061	.064	-.059	-.081	-.072	.805**	
18 Achievement (T3)	.010	.156*	.052	.124	.198**	.218**	.152*	.085	.117	.102	.102	.060	-.040	-.059	-.080	.748**	.890**

*Note.* Language mat = Home language materials; Learning mat = Home learning materials; Parental asp = Parental aspirations; Parental exp = Parental expectations; Schoolwork = Parental help with schoolwork; T1 = Time 1 (kindergarten); T2 = Time 2 (1<sup>st</sup> grade); T3 = Time 3 (2<sup>nd</sup> grade). \*  $p < .05$ ; \*\*  $p < .01$ .

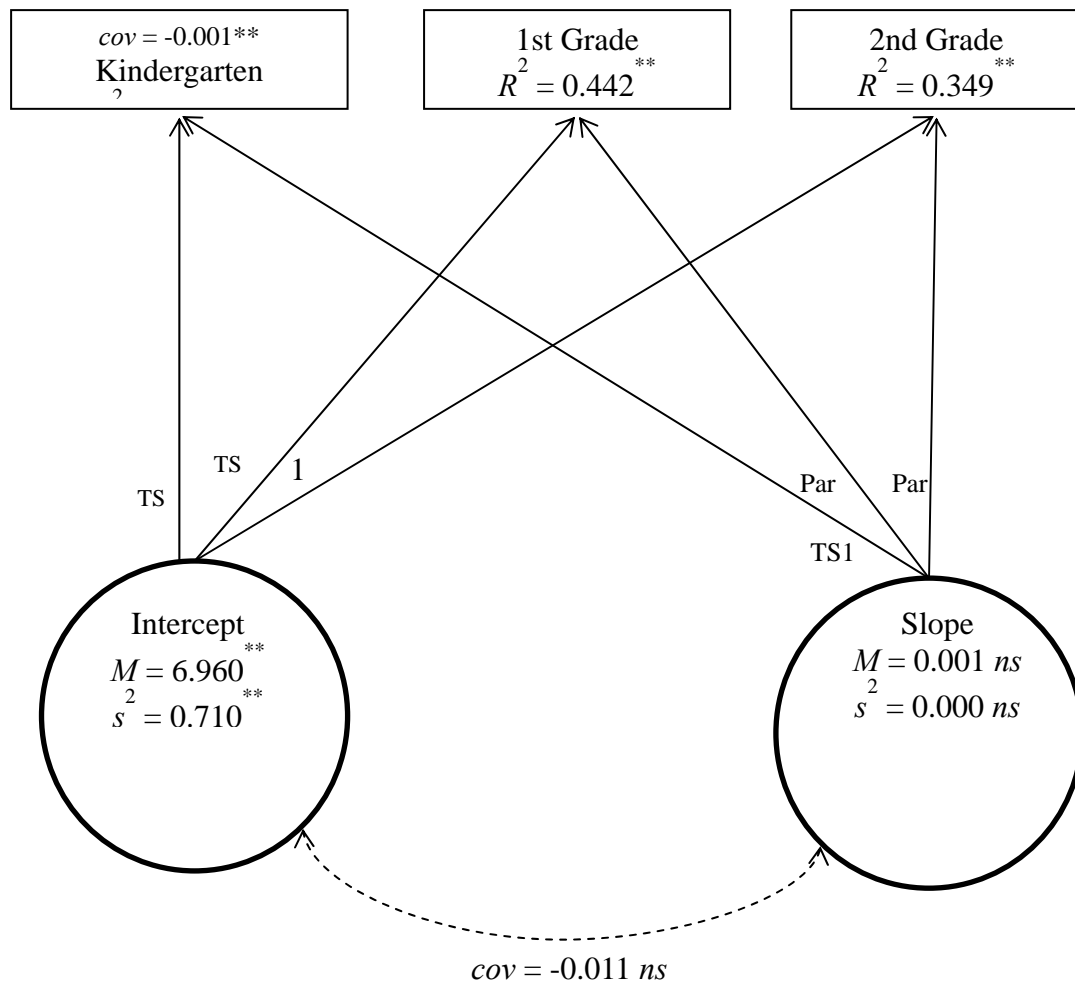


Figure 1. Single-variable growth model: Parental aspirations. TS1 = Time score

1; TS2 = Time score 2; TS3 = Time score 3.  $^{**}p < .01$ .  $M$  = mean,  $s^2$  = variance,

$R^2$  = residual variance.

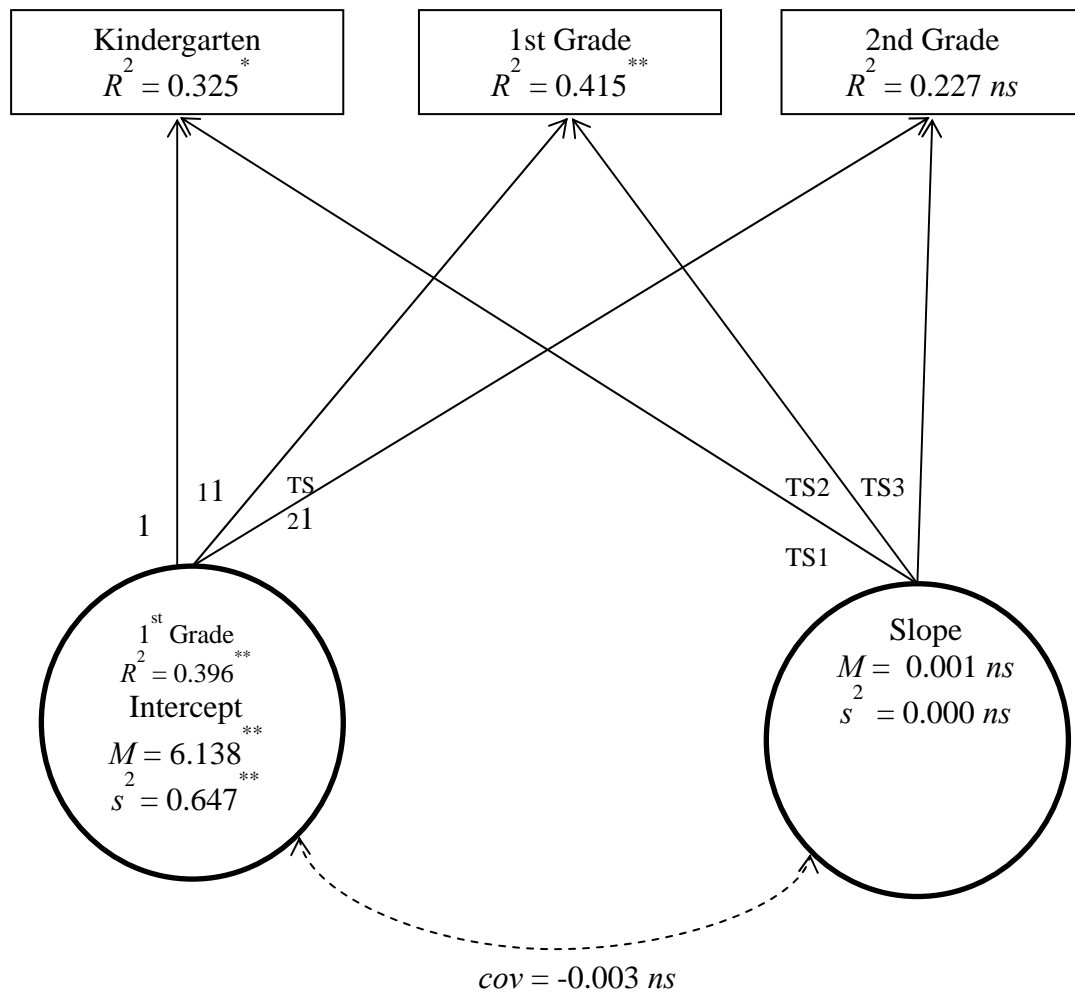


Figure 2. Single-variable growth model: Parental expectations. TS1 = Time score 1; TS2 = Time score 2; TS3 = Time score 3.  $^*p < .05$ ;  $^{**}p < .01$ .  $M$  = mean,  $s^2$  = variance,  $R^2$  = residual variance.

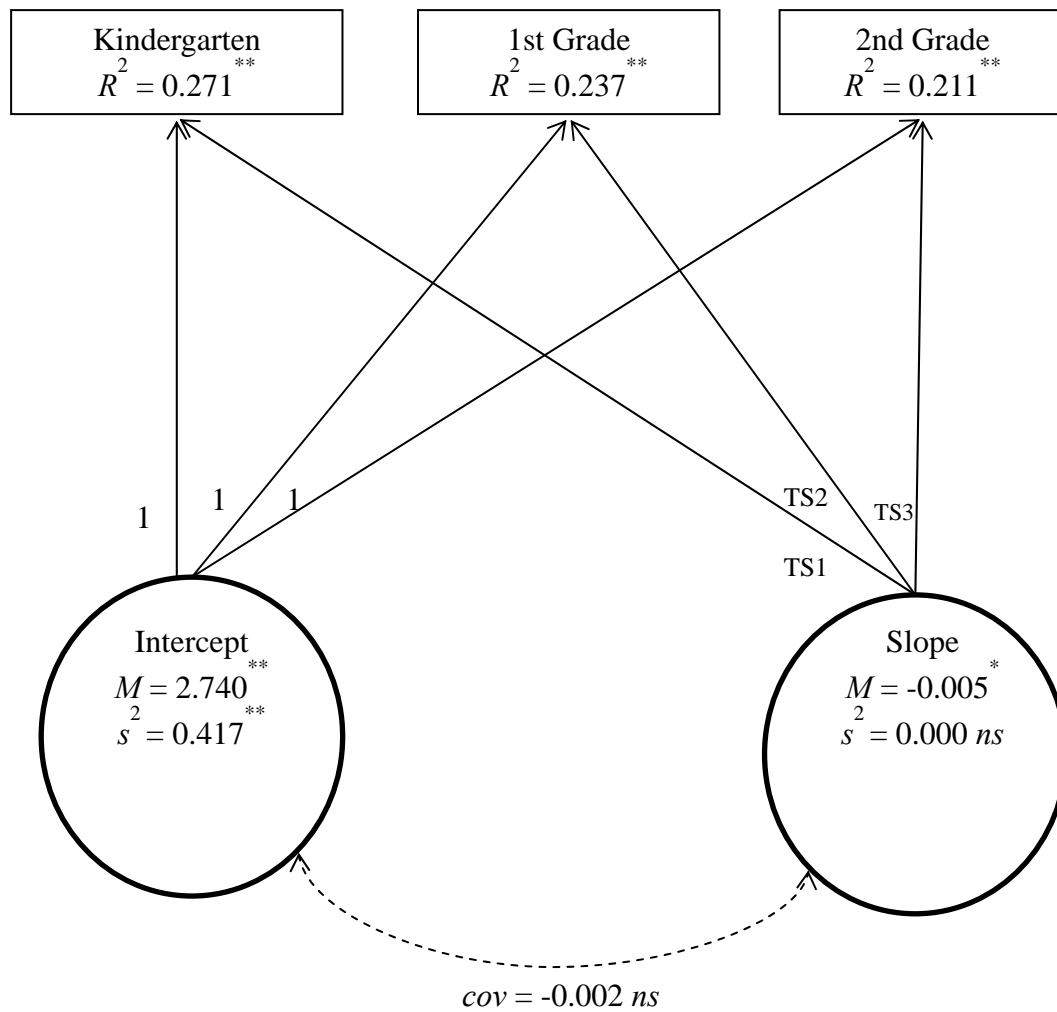


Figure 3. Single-variable growth model: Parental help with schoolwork. TS1 = Time score 1; TS2 = Time score 2; TS3 = Time score 3.  $^* p < .05$ ;  $^{**} p < .01$ .  
 $M$  = mean,  $s^2$  = variance,  $R^2$  = residual variance.

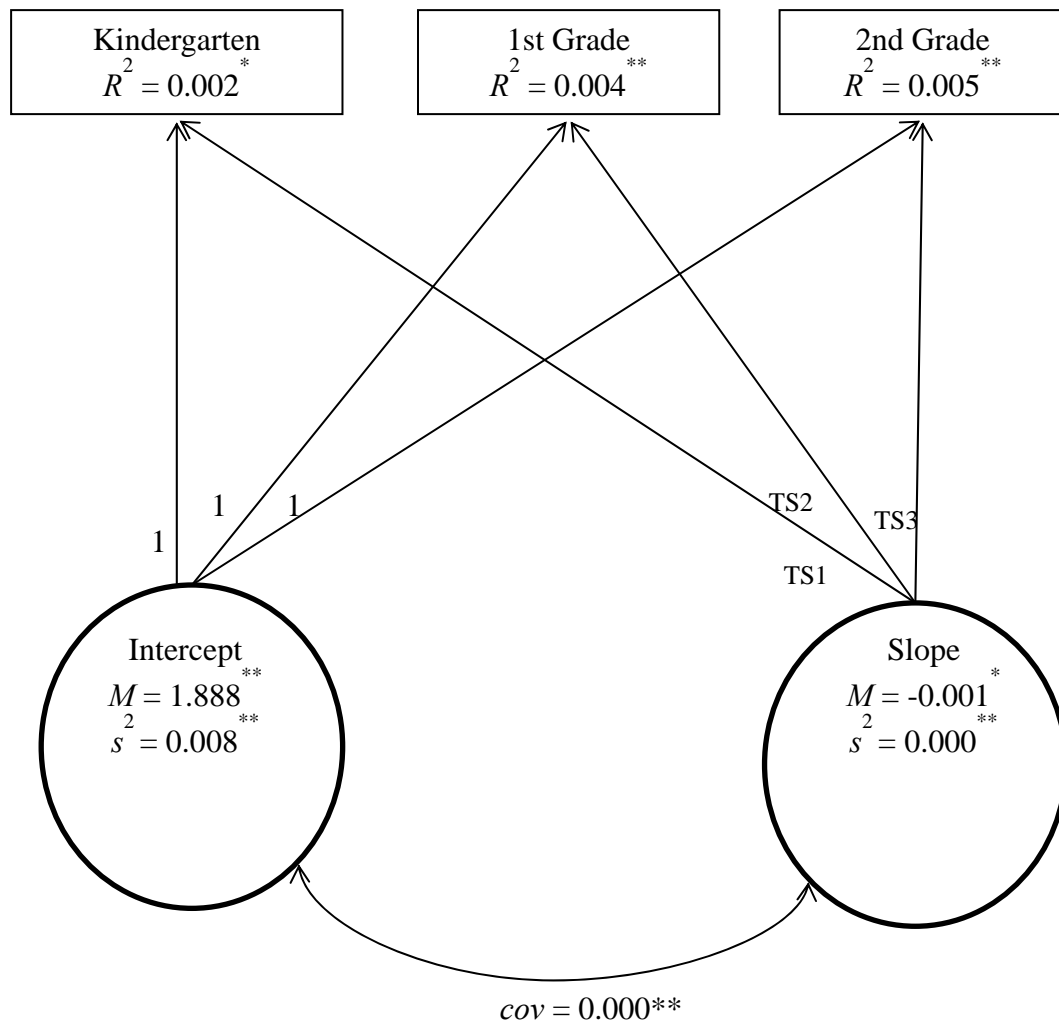


Figure 4. Single-variable growth model: Home learning materials. TS1 = Time score 1; TS2 = Time score 2; TS3 = Time score 3.  $^* p < .05$ ;  $^{**} p < .01$ .  $M$  = mean,  $s^2$  = variance,  $R^2$  = residual variance.

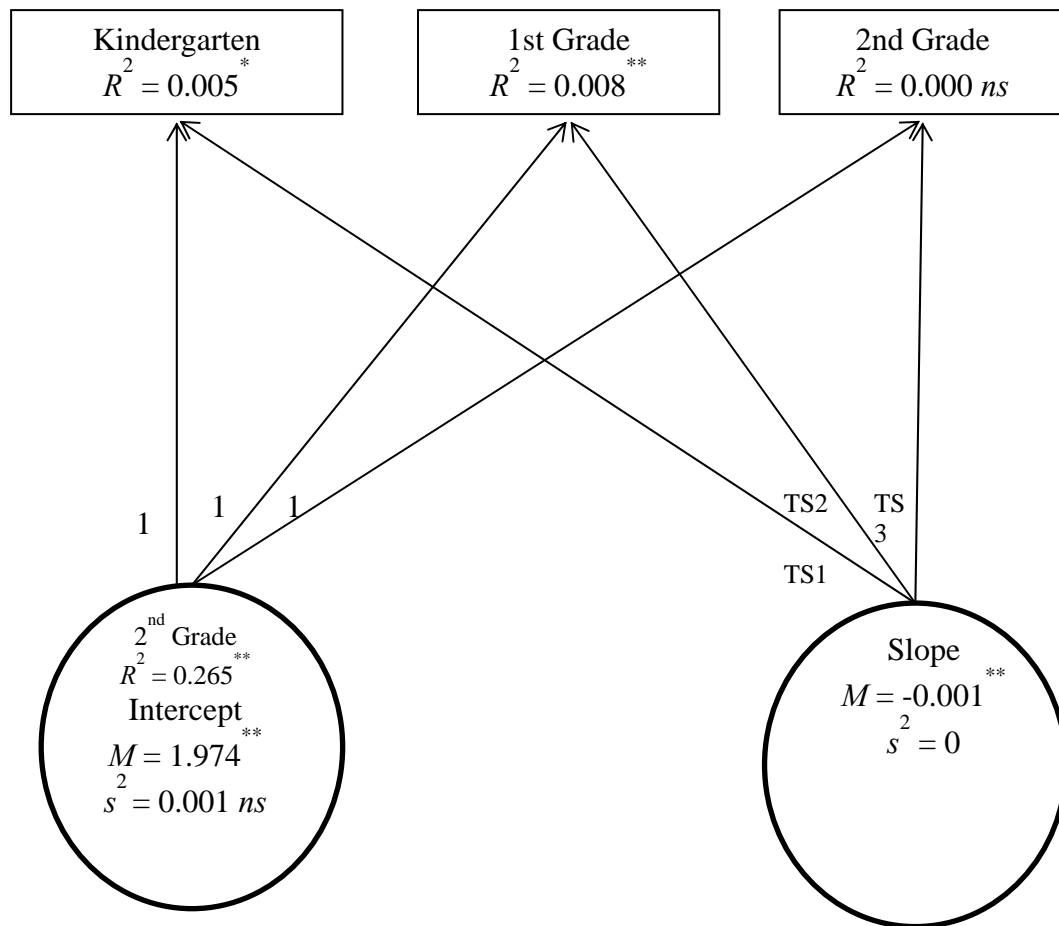


Figure 5. Single-variable growth model: Home language materials. The parameter for the variance for the slope of home language materials was fixed to zero. TS1 = Time score 1; TS2 = Time score 2; TS3 = Time score 3.  $^* p < .05$ ;  $^{**} p < .01$ .  $M$  = mean,  $s^2$  = variance,  $R^2$  = residual variance.



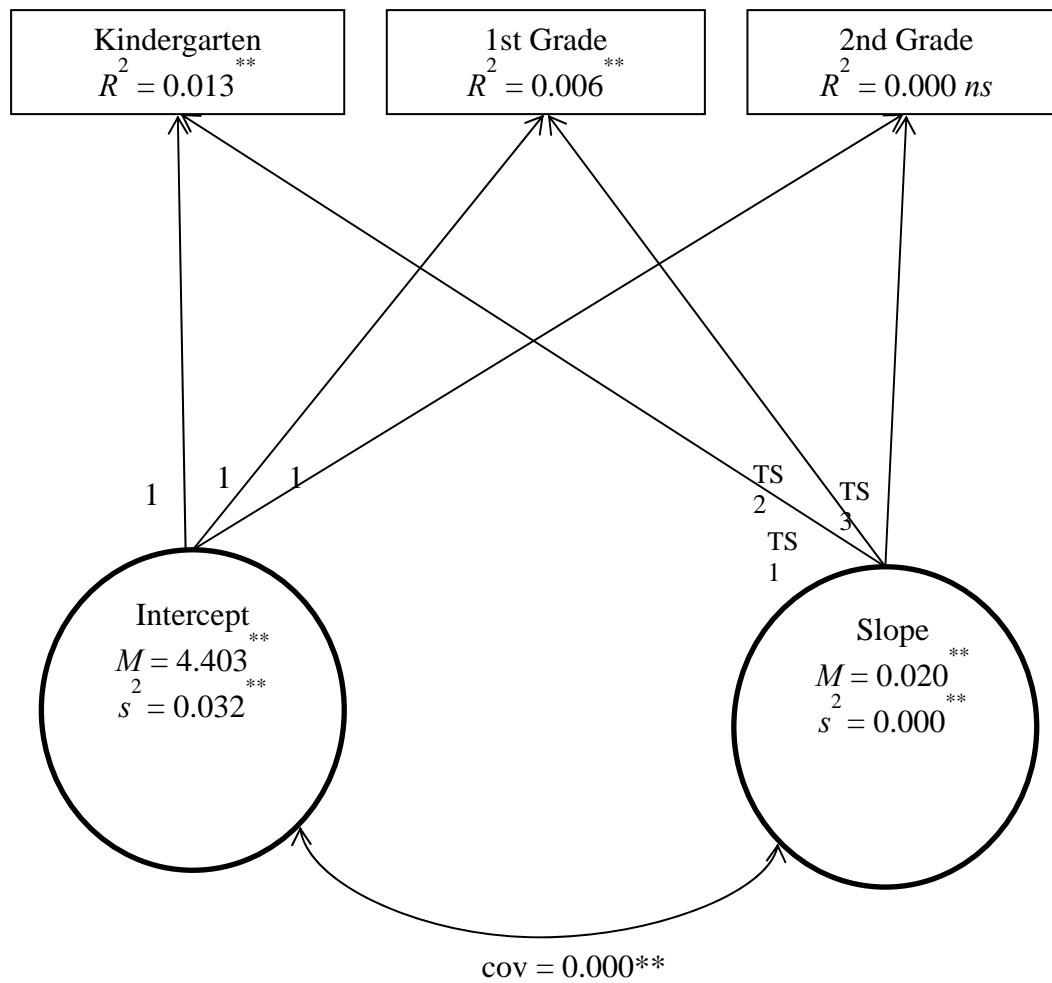


Figure 6. Single-variable growth model: Academic achievement. TS1 = Time score 1; TS2 = Time score 2; TS3 = Time score 3.  $^* p < .05$ ;  $^{**} p < .01$ .  $M$  = mean,  $s^2$  = variance,  $R^2$  = residual variance.

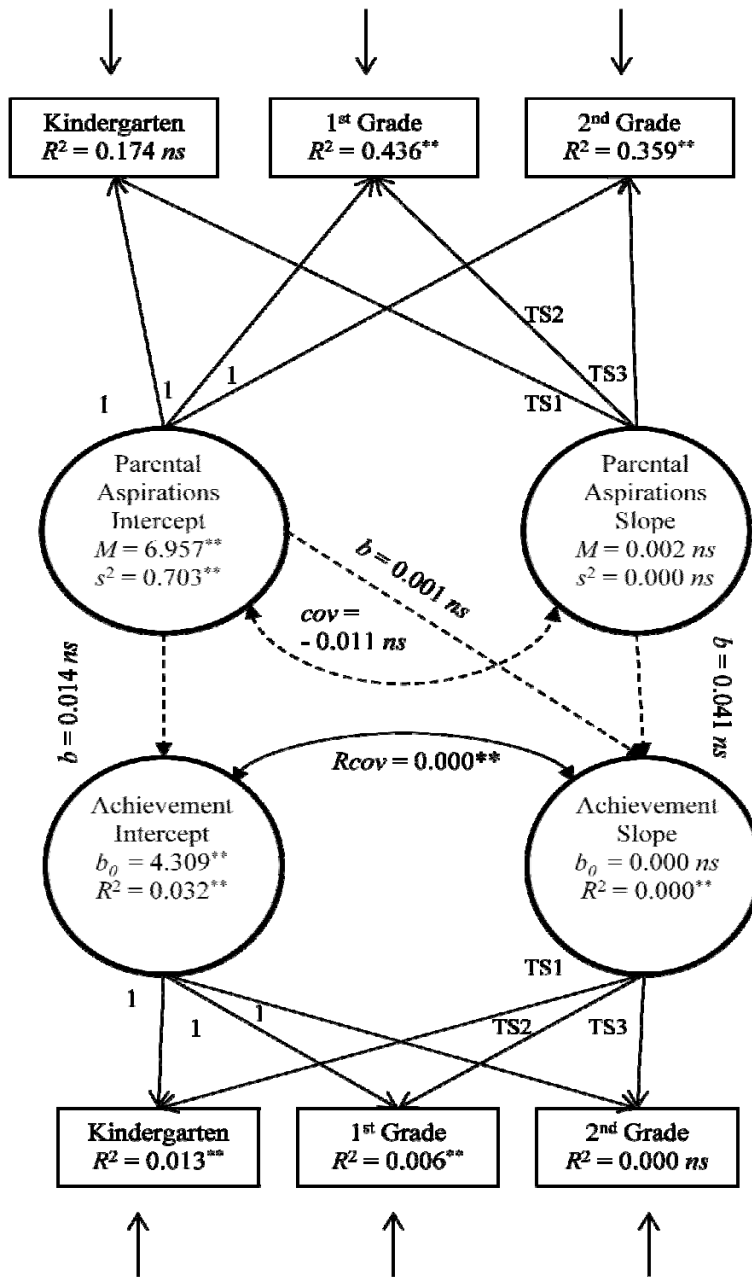


Figure 7. Parallel process model: Parental aspirations. TS1 = Time score 1; TS2 = Time score 2; TS3 = Time score 3. \*  $p < .05$ ; \*\*  $p < .01$ . ns = not significant,  $Rcov$  = residual covariance,  $M$  = mean,  $s^2$  = variance,  $R^2$  = proportion of variance accounted for,  $b$  = regression slope  $b_0$  = regression intercept.

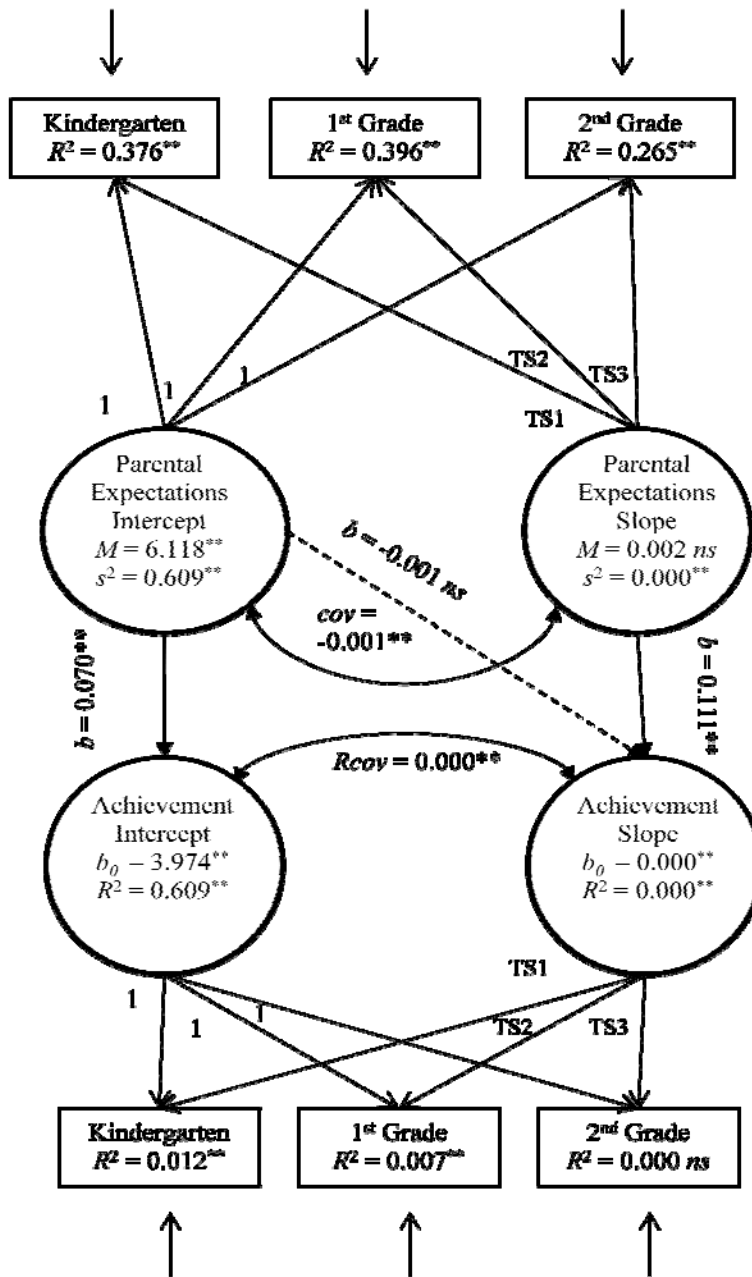


Figure 8. Parallel process model: Parental expectations. TS1 = Time score 1; TS2 = Time score 2; TS3 = Time score 3. \*  $p < .05$ ; \*\*  $p < .01$ . ns = not significant,  $Rcov$  = residual covariance,  $M$  = mean,  $s^2$  = variance,  $R^2$  = proportion of variance accounted for,  $b$  = regression slope  $b_0$  = regression intercept.

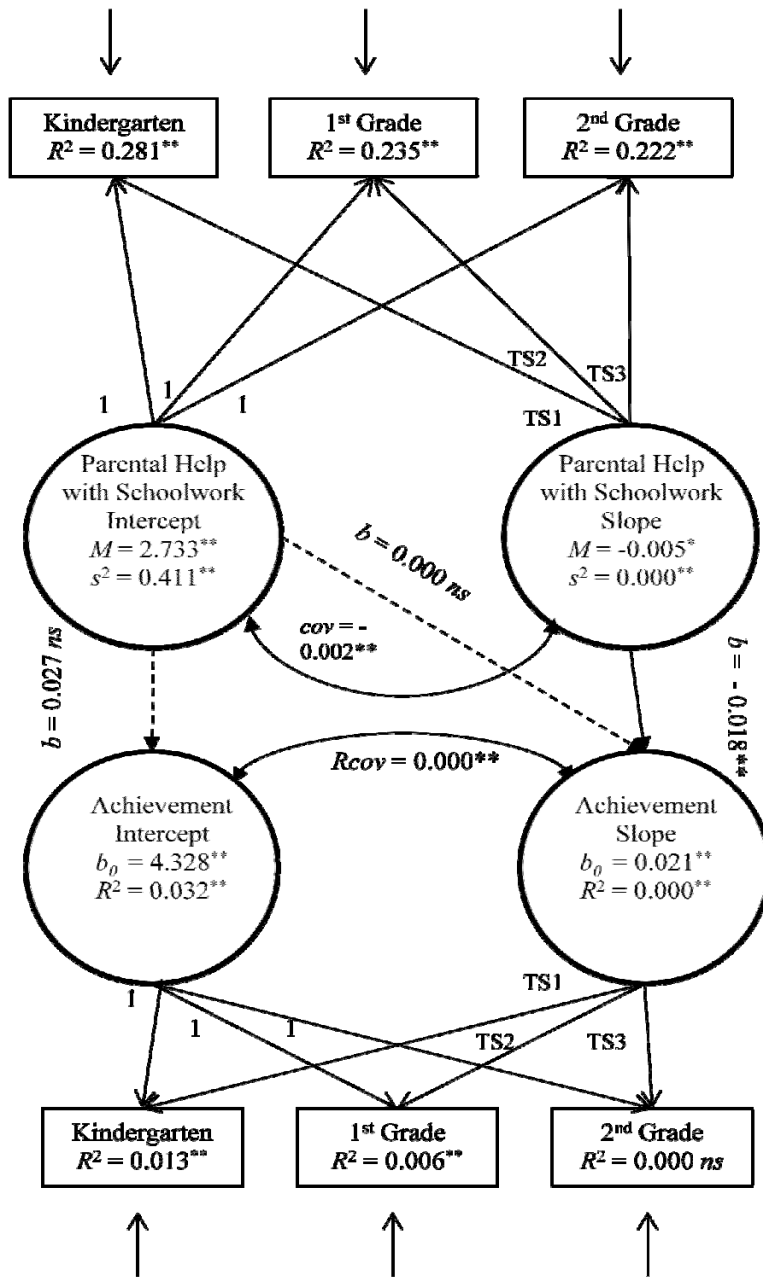


Figure 9. Parallel process model: Parental help with schoolwork. TS1 = Time score 1; TS2 = Time score 2; TS3 = Time score 3. \*  $p < .05$ ; \*\*  $p < .01$ . *ns* = not significant, *Rcov* = residual covariance, *M* = mean,  $s^2$  = variance,  $R^2$  = proportion of variance accounted for, *b* = regression slope  $b_0$  = regression intercept.

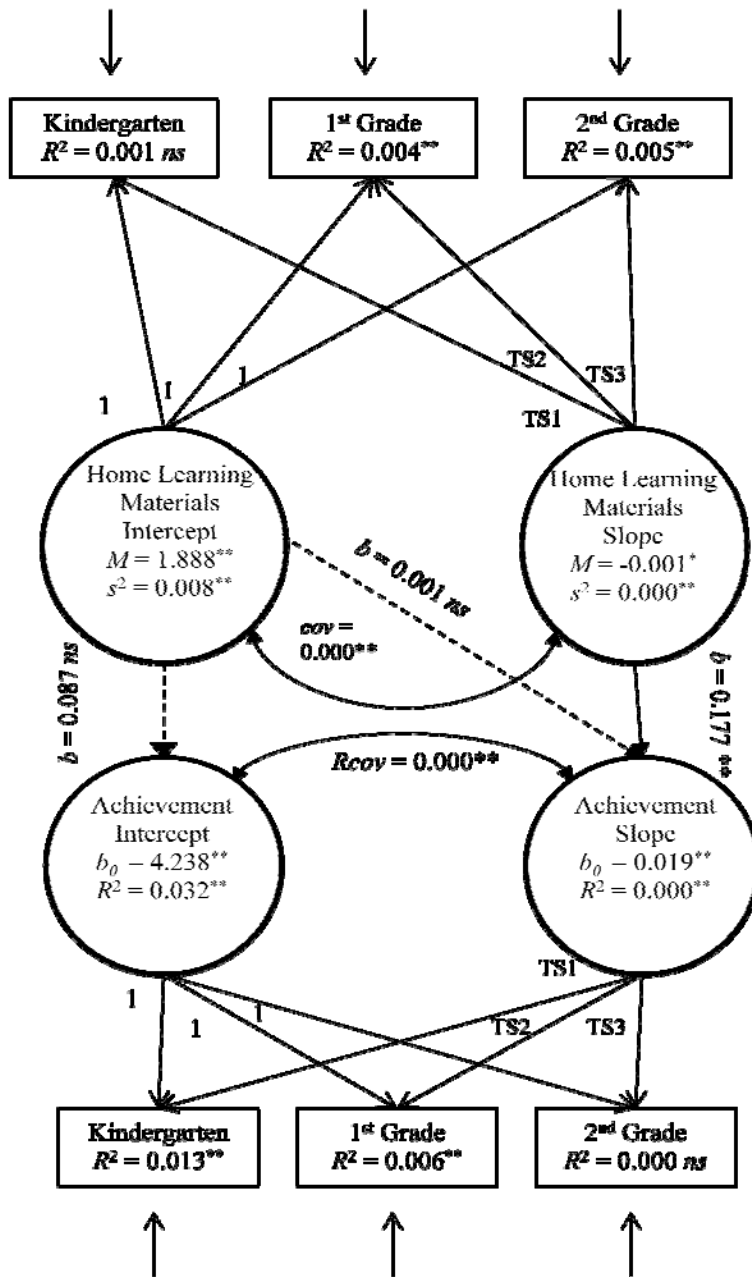


Figure 10. Parallel process model: Home learning materials. TS1 = Time score 1; TS2 = Time score 2; TS3 = Time score 3. \*  $p < .05$ ; \*\*  $p < .01$ . *ns* = not significant, *Rcov* = residual covariance, *M* = mean,  $s^2$  = variance,  $R^2$  = proportion of variance accounted for, *b* = regression slope  $b_0$  = regression intercept.

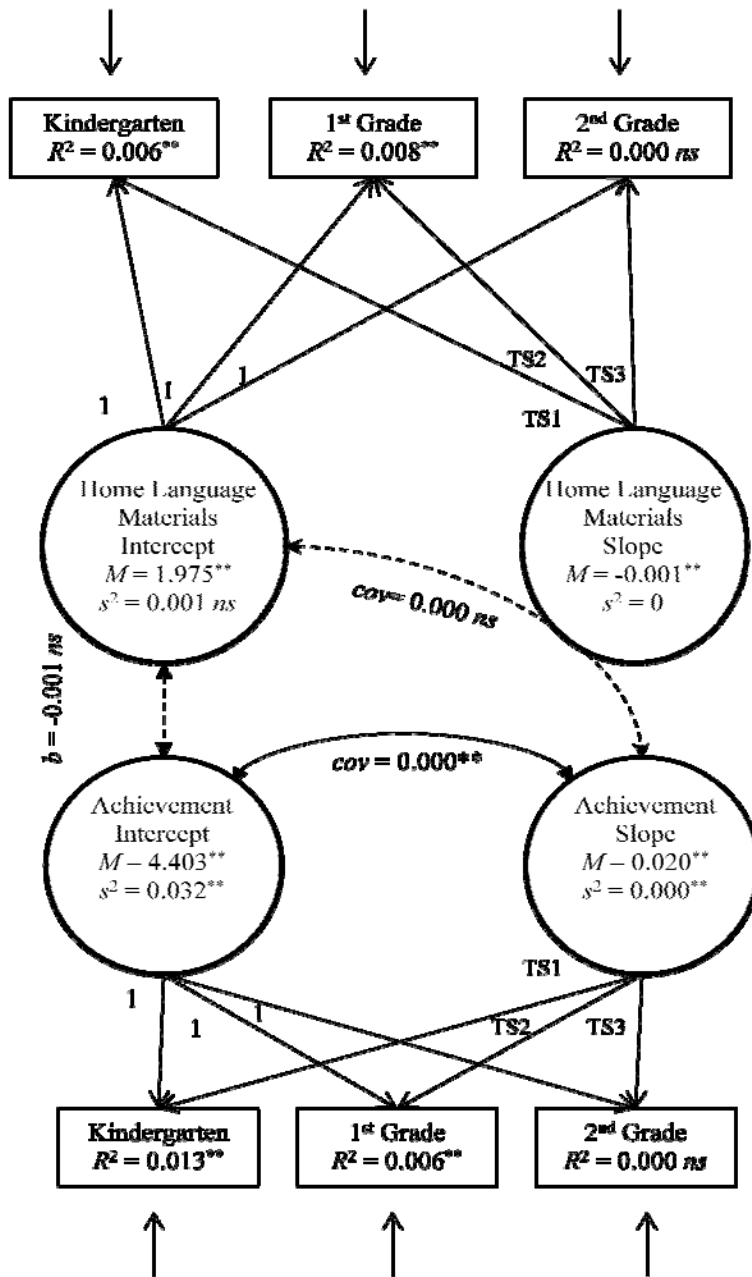


Figure 11. Parallel process model: Home language materials. The parameter for the residual variance for the slope of home language materials was fixed to zero. TS1 = Time score 1; TS2 = Time score 2; TS3 = Time score 3.  $^*p < .05$ ;  $^{**}p < .01$ .  $ns$  = not significant,  $cov$  = covariance,  $M$  = mean,  $s^2$  = variance,  $R^2$  = proportion of variance accounted for.

## APPENDIX A

### PARENTAL ASPIRATIONS/EXPECTATIONS QUESTIONNAIRE

1. In the best of all worlds, how much schooling would you like your child to complete? Please select one.
  - 11<sup>th</sup> grade or less
  - Graduate from high school
  - Post-high school vocational training
  - Some college
  - Graduate from 2 year college with an Associate's degree
  - Graduate from 4 year college with a Bachelor's degree
  - Master's degree or teaching credential program
  - MD, Law, PhD, or other doctoral degree
  
2. Sometimes children do not get as much education as we would like. How much schooling do you expect that your child will really complete? Please select one.
  - 11<sup>th</sup> grade or less
  - Graduate from high school
  - Post-high school vocational training
  - Some college
  - Graduate from 2 year college with an Associate's degree
  - Graduate from 4 year college with a Bachelor's degree
  - Master's degree or teaching credential program
  - MD, Law, PhD, or other doctoral degree



## APPENDIX B

### PARENTAL HELP WITH SCHOOLWORK QUESTIONNAIRE

Parents try to help their children with schoolwork in many different ways. Listed below are some methods parents may use to help their child with schoolwork. Use the following scale to tell us how often, if ever, you use each method with this child.

- 1 = Never
- 2 = Almost Never
- 3 = Occasionally
- 4 = About Half the Time
- 5 = Usually
- 6 = Almost Always
- 7 = Always

1. Buy special supplies (such as games that would make the subject area more interesting).
2. Enroll child in lessons, teams, workshops, or tutoring programs outside of school.
3. Tell child you think she/he is talented in school.
4. Work with the child yourself.
5. Give rewards for good performance.
6. Praise child for working hard at schoolwork.
7. Make sure child spends time on the schoolwork at home (for example: studying, doing homework).
8. Take away privileges if child does not put time into schoolwork after school.
9. Discuss consequences for poor performance.
10. Tell child how proud you are in him/her when child does well in school.
11. Tell child how disappointed you are when child does not do their schoolwork.
12. Discuss with child why this child thinks she/he might do poorly.
13. Tell child hard work is important in school.
14. Reward or praise child for participating.
15. Tell the child how important doing well in school will be for their future.

Source: Childhood and Beyond Study: <http://www.rcgd.isr.umich.edu/cab/>.

APPENDIX C

HOME INVENTORY

Please answer yes or no to each item.

1. My child has toys which teach colors, sizes, and shapes.
2. My child has toys that help teach names of animals.
3. My child has 3 or more puzzles.
4. Our family encourages the child to learn the alphabet.
5. My child has a record, tape, or CD player and at least 5 children's records, tapes, or CDs.
6. I teach my child simple verbal manners (Please, Thank you, I'm sorry).
7. My child has toys or games permitting free expression (such as clay, finger paints, play dough, or crayons or paint with large pieces of paper).
8. My child has toys or games requiring refined movements (such as small building materials, train sets requiring assembly, or dolls with clothes that can be put on or taken off).
9. I encourage my child to talk and take time to listen.
10. My child has toys or games that help teach numbers.
11. My child has at least 10 children's books.
12. Our family buys and reads a daily newspaper.
13. My child is permitted a choice in the breakfast or lunch menu.
14. Our family subscribes to at least one magazine.
15. I encourage my child to learn shapes.

Source: Bradley et al., 1992

APPENDIX D

ARIZONA STATE UNIVERSITY INSTITUTIONAL REVIEW BOARD

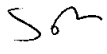
APPROVAL FORM

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Office of Research Integrity and Assurance

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**To:** Carlos Valiente  
COWDN

**From:** Mark Roosa, Chair   
Soc Beh IRB

**Date:** 11/02/2011

**Committee Action:** **Renewal**

**Renewal Date:** 11/02/2011

**Review Type:** Expedited F7

**IRB Protocol #:** 0601000559

**Study Title:** The Role of Social and Emotional Processes in Children's Academic Competence

**Expiration Date:** 11/20/2012

The above-referenced protocol was given renewed approval following Expedited Review by the Institutional Review Board.

It is the Principal Investigator's responsibility to obtain review and continued approval of ongoing research before the expiration noted above. Please allow sufficient time for reapproval. Research activity of any sort may not continue beyond the expiration date without committee approval. Failure to receive approval for continuation before the expiration date will result in the automatic suspension of the approval of this protocol on the expiration date. Information collected following suspension is unapproved research and cannot be reported or published as research data. If you do not wish continued approval, please notify the Committee of the study termination.

This approval by the Soc Beh IRB does not replace or supersede any departmental or oversight committee review that may be required by institutional policy.

**Adverse Reactions:** If any untoward incidents or severe reactions should develop as a result of this study, you are required to notify the Soc Beh IRB immediately. If necessary a member of the IRB will be assigned to look into the matter. If the problem is serious, approval may be withdrawn pending IRB review.

**Amendments:** If you wish to change any aspect of this study, such as the procedures, the consent forms, or the investigators, please communicate your requested changes to the Soc Beh IRB. The new procedure is not to be initiated until the IRB approval has been given.